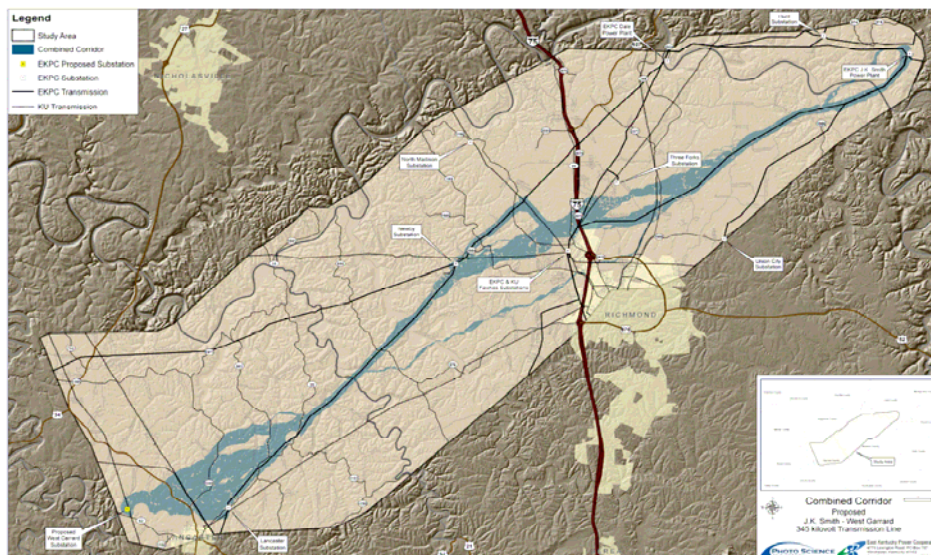


Biological Assessment/Evaluation for the Proposed Smith – West Garrard 345 kV Transmission Line and Switching Stations Project Clark, Madison, and Garrard Counties, Kentucky



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**Biological Assessment/Evaluation for the
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Switching Stations Project
Clark, Madison, and Garrard Counties, Kentucky**

I. Introduction

This Biological Assessment/Evaluation (BAE) will address and evaluate the effects of the following proposed USDA Rural Development action(s) on federally threatened, endangered species and species considered candidates for listing and designated critical habitat within the action area of the project. This document also complies with the requirements of the Endangered Species Act to disclose effects on listed species and their habitats. Additionally, this document provides a standard process to provide full consideration of candidate species for listing and federally listed threatened or endangered species and their habitats and critical habitat in the decision-making process.

The exact location of the proposed 345 kV transmission line has yet to be determined. EKPC engineers are currently analyzing multiple alternatives for this project. Currently, a Study Corridor (See Figure 1, Appendix 1) has been compiled and the alternative routes (Appendix 2. Alternative Routes Maps) for the proposed transmission line are located within this corridor. The alternative routes run in a general southwest manner, beginning at the proposed J. K. Smith Substation, located on the J. K. Smith site in southern Clark County, and ending at the proposed West Garrard Substation site just north of Lancaster, Kentucky along US 52 in Garrard County. The majority of the corridor is located in Madison County, to the north of Richmond, Kentucky and to the south of the Kentucky River.

The Study Corridor developed for this project lies within the Inner Blue Grass region of the state, which is characterized by rolling hills and sloping valleys (McGrain and Currens 1978). Land use in the region is characterized by the majority of upland areas being used for agricultural purposes (See Figure 2, Appendix 1), with wooded habitats limited to the more deeply entrenched valleys. Based upon field investigations, this characterization holds true in the Study Corridor, with approximately 75% of the area cleared and used for agricultural and private purposes. The remaining wooded areas are primarily located in riparian zones, small disjunct clusters, and along fencerows. Dominant tree species within the wooded areas are silver maple (*Acer saccharinum*), sugar maple (*Acer saccharum*), box elder (*Acer negundo*), shellbark hickory (*Carya laciniosa*), hackberry (*Celtis occidentalis*), green ash (*Fraxinus pennsylvanica*), black walnut (*Juglans nigra*), eastern red cedar (*Juniperus virginiana*), and sycamore (*Platanus occidentalis*).

The proposed transmission line will be approximately 35 - 37 miles in length and would require a 150-foot wide right-of-way. A large percentage of the proposed transmission line will be collocated with existing transmission lines wherever possible, in an attempt to lessen the impact on the natural environment and the private landowners in the area. In areas where collocation (parallel/rebuild existing facilities) is possible, the additional

right-of-way needed for this project will be less than 150 feet. Although the majority of the proposed transmission line will traverse previously cleared land, the clearing of trees will be required in some areas.

A worst-case scenario for tree removal for this project has been calculated based upon the following assumptions:

1. 25% of the right-of-way would require tree removal
2. No collocation of existing facilities would be utilized (parallel or rebuild existing facilities)
3. The longest alternative proposed (approximately 37 miles) would be selected

Based upon these projections and existing land use data it is estimated approximately 150 acres of forested area would be removed for this proposal. The actual amount of tree removal will be much less since approximately 80% of all of the proposed alternative routes (See Figure 3, Appendix 1) for this facility involves collocation (parallel or rebuild) of existing transmission facilities.

II. Consultation History

The US Fish and Wildlife Service was contacted by letter in late June of 2006 inviting them to attend an agency scoping meeting for this project. USFWS personnel were also provided with the macro-corridor study prepared for this project. USFWS personnel were unable to attend the meeting due to prior commitments. Lee Andrews, Mike Armstrong, and Mindi Lawson (USFWS) have been involved in discussions concerning this project with Joe Settles (East Kentucky Power Cooperative). USFWS personnel have also reviewed a mist netting survey plan for this proposal. USFWS personnel determined the plan was adequate and that a sufficient number of sites were proposed for mist netting on the project. EKPC biologists (Joe Settles, Jeff Hohman, Josh Young, Seth Bishop, Missy Toncray, Brian Gasdorf, and Chris Carpenter) as well as Julian Campbell, James Kiser and Doug Stephens (Biological contractors) have conducted site visits to evaluate and discuss construction measures and potential affects associated with the project.

III. Proposed Management Action

EKPC will install and maintain a 35-37 mile of 345 kilovolt (kV) transmission line with a 150-foot wide right-of-way in Clark, Madison, and Garrard counties, KY. The proposed 345 kV transmission line project would be constructed within one of several alternative routes under consideration. The alternative transmission line routes originate at the J.K. Smith Power Station near the community of Trapp in Clark County, KY and terminate at the proposed location of a new 345 kV switching station (See Appendix 2. Alternative Routes Maps).

IV. Project Location

The proposed project area is located in Clark, Madison, and Garrard Counties, Kentucky. The project begins at EKPC's existing J.K. Smith Power Station near the community of Trapp in southern Clark County and extends westward into northeastern Madison County. The alternative routes for the proposal then head in a southwest fashion through the central part of Madison County north of the City of Richmond. The alternatives for the project then enter the northeastern portion of Garrard County and terminate on near the southwestern edge of Garrard County west of the City of Lancaster. Alternative routes for the project are located on portions of the Hedges, Palmer, Union City, Richmond North, Valley View, Kirksville, Buckeye, and Bryantsville 7.5 minute series topographic quadrangles (See Appendix 2. Alternative Routes Maps).

V. Species Considered and Species Evaluated

All federally listed threatened and endangered species and species that are candidates for listing (CET) and proposed critical habitat identified by the US Fish and Wildlife Service as occurring or historically occurring in Kentucky are considered in this BAE. Fifty-two federally listed and fourteen candidate species were identified as historically or potentially occurring in Kentucky. These species and the six critical habitats identified for Kentucky are listed in Table 1 and Table 2.

Table 1. Federally listed species identified as potentially occurring or historically occurring in Kentucky.

Group	Common Name	Species	Status
Plants	Braun's rockcress	<i>Arabis perstellata</i>	E
	Chaffseed *	<i>Schwalbea americana</i>	E
	Cumberland rosemary	<i>Conradina verticillata</i>	T
	Cumberland sandwort	<i>Minuartia cumberlandensis</i>	E
	Lesquereux's bladderpod	<i>Lesquerella globosa</i>	C
	Price's potato-bean	<i>Apios priceana</i>	T
	Running buffalo clover	<i>Trifolium stoloniferum</i>	E
	Short's goldenrod	<i>Solidago shortii</i>	E
	Virginia spiraea	<i>Spiraea virginiana</i>	T
	White fringeless orchid	<i>Platanthera integrilabia</i>	C
	White-haired goldenrod	<i>Solidago albopilosa</i>	T
Mussels	Catspaw	<i>Epioblasma obliquata obliquata</i>	E
	Clubshell	<i>Pleurobema clava</i>	E
	Cracking pearlymussel ^	<i>Hemistena lata</i>	E
	Cumberland bean	<i>Villosa trabalis</i>	E
	Cumberland elktoe	<i>Alasmidonta atropurpurea</i>	E
	Cumberlandian combshell	<i>Epioblasma brevidens</i>	E
	Dromedary pearlymussel ^	<i>Dromus dromas</i>	E
	Fanshell	<i>Cyprogenia stegaria</i>	E
	Fat pocketbook	<i>Potamilus capax</i>	E

Group	Common Name	Species	Status
	Fluted kidneyshell	<i>Ptychobranchus subtentum</i>	C
	Littlewing pearlymussel	<i>Pegias fibula</i>	E
	Northern riffleshell	<i>Epioblasma torulosa rangiana</i>	E
	Orangefoot pimpleback	<i>Plethobasus cooperianus</i>	E
	Oyster mussel	<i>Epioblasma capsaeformis</i>	E
	Pink mucket	<i>Lampsilis abrupta</i>	E
	Rayed Bean	<i>Villosa fabalis</i>	C
	Ring pink	<i>Obovaria retusa</i>	E
	Rough pigtoe	<i>Pleurobema plenum</i>	E
	Scaleshell * ^	<i>Leptodea leptodon</i>	E
	Sheepnose	<i>Plethobasus cyphus</i>	C
	Slabside pearlymussel * ^	<i>Lexingtonia dolabelliformis</i>	C
	Spectaclecase	<i>Cumberlandia monodonta</i>	C
	Tan riffleshell	<i>Epioblasma florentina walkeri</i>	E
	Tubercled blossom * ^	<i>Epioblasma torulosa torulosa</i>	E
	White catspaw * ^	<i>Epioblasma obliquata perobliqua</i>	E
	White wartyback ^	<i>Plethobasus cicatricosus</i>	E
	Winged mapleleaf ^	<i>Quadrula fragosa</i>	E
	Yellow blossom * ^	<i>Epioblasma florentina florentina</i>	E
Crustacean	Kentucky Cave shrimp	<i>Palaemonias ganteri</i>	E
Insects	American burying beetle	<i>Nicrophorus americanus</i>	E
	Beaver Cave beetle	<i>Pseudanophthalmus major</i>	C
	Clifton Cave beetle	<i>Pseudanophthalmus caecus</i>	C
	Icebox Cave beetle	<i>Pseudanophthalmus frigidus</i>	C
	Louisville Cave beetle	<i>Pseudanophthalmus troglodytes</i>	C
	Surprising Cave beetle	<i>Pseudanophthalmus inexpectatus</i>	C
	Tatum Cave beetle	<i>Pseudanophthalmus parvus</i>	C
Birds	Bachman's warbler * ^	<i>Vermivora bachmanii</i>	E
	Bald eagle	<i>Haliaeetus leucocephalus</i>	T
	Interior least tern	<i>Sterna antillarum athalassos</i>	E
	Ivory-billed woodpecker * ^	<i>Campephilus principalis</i>	E
	Piping plover (migrant only)	<i>Charadrius melodus</i>	T
	Red-cockaded woodpecker * ^	<i>Picoides borealis</i>	E
	Whooping Crane * ^	<i>Grus Americana</i>	E
Fishes	Blackside dace	<i>Phoxinus cumberlandensis</i>	T
	Cumberland darter	<i>Etheostoma nigrum susanae</i>	C
	Duskytail Darter	<i>Etheostoma percnurum</i>	E
	Palezone Shiner	<i>Notropis albizonatus</i>	E
	Pallid Sturgeon	<i>Scaphirhynchus albus</i>	E
	Relict Darter	<i>Etheostoma chienense</i>	E
Mammal	Eastern cougar * ^	<i>Felis concolor cougar</i>	E
	Gray myotis	<i>Myotis grisescens</i>	E
	Gray wolf * ^	<i>Canis Lupus</i>	E
	Indiana bat	<i>Myotis sodalis</i>	E

Group	Common Name	Species	Status
	Red wolf * ^	<i>Canis Rufus</i>	E
	Virginia big-eared bat	<i>Corynorhinus townsendii virginianus</i>	E

Status 'E' means the species is listed as 'Endangered' by USFWS.

Status 'T' means the species is listed as 'Threatened' by USFWS.

Status 'C' means the species is considered a candidate for listing by USFWS.

* Federally listed species not included on U.S. Fish & Wildlife's state list for Kentucky (Historic records) - www.fws.gov/endangered/wildlife.htm

^ Federally listed species thought to be extirpated from Kentucky

List obtained from the Kentucky State Nature Preserves Commission (List Dated January 2006)

<http://www.naturepreserves.ky.gov>

Table 2. Critical habitat in Kentucky that has been identified for six federally endangered species.

Group	Common Name	Critical Habitat in KY
Plant	Braun's rockcress	<i>Critical Habitat was designated in 2004 - 22 areas (1600 acres) in Kentucky and Tennessee; 14 areas in Franklin County and 3 in Owen County (all areas were occupied) - other areas in Rutherford and Wilson counties, Tennessee (69 FR 31460-31496, June 2004)</i>
Mussels	Cumberland Elktoe	<i>Critical Habitat was designated in 2004 for five Kentucky areas: Rock Creek, McCreary County (river miles [RM] 4-11, mth of White Oak upstream to mth Dolan Branch); Big South Fork Cumberland River, McCreary County, KY (27 RM in KY and TN plus additional streams in TN); Sinking Creek, Laurel County (8 RM: mth upstream to mth Laurel Branch); Marsh Creek, McCreary County (15 RM: mouth to KY 92 bridge); and Laurel Fork (2 RM: state line and upstream - also 3 RM downstream in Tennessee, Claiborne County); CH designated for other areas in Tennessee (68 FR 33234-33282).</i>
	Cumberlandian Combshell	<i>Critical Habitat was designated in 2004 for two Kentucky areas: Big South Fork Cumberland River, McCreary County, KY (27 RM in KY and TN plus additional streams in TN); and Buck Creek, Pulaski County (36 RM, KY 192 bridge upstream to the KY 328 bridge); other CH designated in AL, MS, TN, and VA (69 FR 53136-53180, Aug. 2004).</i>
	Oyster Mussel	<i>Critical Habitat was designated in 2004 for two Kentucky areas: Big South Fork Cumberland River, McCreary County, KY (27 RM in KY and TN plus additional streams in TN); and Buck Creek, Pulaski County (36 RM, KY 192 bridge upstream to the KY 328 bridge); other CH designated in AL, MS, TN, and VA (69 FR 53136-53180, Aug. 2004).</i>
Crustacean	Kentucky Cave Shrimp	<i>Critical Habitat designated in 1983 – Roaring River Passage of Mammoth Cave, Mammoth Cave national Park (48 FR 46337-46342, Oct. 1983)</i>
Mammal	Indiana Bat	<i>Bat Cave (Carter County) and Coach Cave (Edmonson County) have been designated as Critical Habitat (41 FR 41914-41916, Sept. 1976)</i>

Fifteen federally listed species and one candidate species, from Table 1, were eliminated from further consideration for this project. These sixteen species are; cracking pearlymussel, dromedary pearlymussel, scaleshell, slabside pearlymussel, tubercled

blossom, white catspaw, white wartyback, winged mapleleaf, yellow blossom, Bachman's warbler, ivory-billed woodpecker, red-cockaded woodpecker, whooping crane, eastern cougar, gray wolf, and red wolf. These species are now considered either: (1) likely to be extinct or (2) likely extirpated from Kentucky with no suitable habitat remaining that would allow for recovery. Consequently, the proposed action will have **"no effect"** on these species and they will not be considered further in this BAE. Should new information arise concerning these species in the project area they will again receive further evaluation. The elimination of these sixteen species results in 50 CET species requiring further consideration in this BAE.

The final set of CET species that appears below was derived from several sources, including:

- a) An analysis of available distribution records from the state heritage program (Kentucky State Nature Preserves Commission);
- b) The comparison of various habitat types that lie within the range of influence of the proposed project with the habitat requirements of CET species that might occur within the area of influence of the project and with management activities that might affect them in either an adverse or a beneficial manner;
- c) Concerns for the welfare of particular CET species and species groups that were expressed by various state and federal agencies, private groups, and private individuals during the scoping process.

Special attention was paid to CET species that had previously been reported from within or near the boundaries of the Study Area of the project and which were thus most likely to occur within the area of influence of the project. The "area of influence" is defined as the area in which the proposed project activities could potentially have a direct, indirect or foreseeable cumulative effect upon a particular species or habitat in which the species is likely to occur. The area of influence for this proposal includes the 150-foot right-of-way for the alternative routes developed for this project (See Appendix 2 Alternative Routes Map).

Based on current known distribution and habitat preference, 45 of the 50 CET were dismissed from further analysis in this BAE. These 45 species either have ranges that are well outside this proposed project's area of influence or else do not have suitable habitat within the area of influence of this proposed project. Table 3 lists the CET species eliminated from further analysis.

Table 3. Federal Species dismissed from further Analysis

<u>Status</u>	<u>Common Name</u>	<u>Associated Habitat</u>	<u>Reason for Dismissal from Further Analysis</u>
E	Braun's rockcress	Restricted to Franklin, Owen, and Henry counties	Area of influence not within known current range of species.
E	Chaffseed *	Occurs in sandy, acidic, hydro-xeric soils in savannahs and pinelands	Area of influence not within known current range of species.
T	Cumberland rosemary	Floodplains of watercourses in McCreary County.	Area of influence not within known current range of species.

<u>Status</u>	<u>Common Name</u>	<u>Associated Habitat</u>	<u>Reason for Dismissal from Further Analysis</u>
E	Cumberland sandwort	Restricted to shady, moist rockhouse floors, overhanging ledges, and solution pockets in sandstone rock faces in McCreary County.	Area of influence not within known current range of species.
T	Price's potato-bean	Mesic forests, often next to streams, Marshall, Calloway, Livingston, Lyon, Trigg, Crittenden.	Area of influence not within known current range of species..
E	Short's goldenrod	In Kentucky, restricted to Robertson, Nicholas, and Fleming; historic record from Jefferson County (Falls of the Ohio - 1848)	Area of influence not within known current range of species.
T	Virginia spiraea	Edges of large streams/rivers; 2 disjunct populations in Kentucky: southeastern KY and Lewis County	Area of influence not within known current range of species.
C	White fringeless orchid	Streamhead bogs and seeps in southeastern KY.	Area of influence not within known current range of species.
T	White-haired goldenrod	Restricted to sandstone rockhouses (inside the drip line) of the Red River Gorge (Elliott, Menifee, and Wolfe counties); 90% of plants located on DBNF property	Area of influence not within known current range of species.
E	Catspaw	Possibly extirpated from Kentucky - formerly known from the Ohio River and its tributaries (e.g., Green River);	Area of influence not within known current range of species.
E	Clubshell	Sporadic in the upper Green River; possibly the Ohio River (80s record); Eagle Creek; Licking River: Lower Cumberland/Tennessee River: Ohio River mainstem: Salt River	Area of influence not within known current range of species.
E	Cumberland bean	Buck Creek, Big South Fork Cumberland River, Rockcastle River, Horselick Creek, Laurel Fork, Roundstone Creek, Sinking Creek	Area of influence not within known current range of species.
E	Cumberland elktoe	Endemic to upper Cumberland River (above and below Cumberland Falls); persists in Big South Fork, Marsh Creek, and Sinking Creek	Area of influence not within known or historical range of species.
E	Cumberlandian combshell	Sporadic in upper Cumberland - likely persists only in Big South Fork and Buck Creek	Area of influence not within known current range of species.
E	Fanshell	Persists in the upper Green River, Licking River, Ohio River mainstem, and Rolling Fork Salt River	Area of influence not within known current range of species.
E	Fat pocketbook	Sporadic in the Mississippi River, lower Ohio (mouth of Wabash downstream) - and Cumberland and Tennessee River below the dams	Area of influence not within known current range of species.
C	Fluted kidneyshell	Red River and Upper Cumberland	Area of influence not within known current range of species.
E	Littlewing pearlymussel	Sporadic in upper Cumberland River - still persists in Big South Fork Cumberland River and Horselick Creek; records from Red River system in western Kentucky	Area of influence not within known current range of species.
E	Northern riffleshell	Green River, Salt River, and Licking River drainages; Possibly extirpated from Kentucky - formerly known from the Ohio River and its tributaries	Area of influence not within known current range of species.
E	Orangefoot pimpleback	Green River: Lower Tennessee: Ohio River mainstem, and Salt River	Area of influence not within known current range of species.
E	Oyster mussel	Sporadic in upper Cumberland - No recent records, possibly extirpated from Kentucky;	Area of influence not within known current range of species.
E	Pink mucket	Green River, Ohio River mainstem, and Salt River	Area of influence not within known current range of species.
C	Rayed Bean	Possibly extirpated - formerly Ohio River, Green River to Licking River	Area of influence not within drainage known to support species.

<u>Status</u>	<u>Common Name</u>	<u>Associated Habitat</u>	<u>Reason for Dismissal from Further Analysis</u>
E	Ring pink	Ohio River mainstem, Green River, Lower Tennessee River, and Red River	Area of influence not within known current range of species.
E	Rough pigtoe	Ohio River mainstem and Green River	Area of influence not within known current range of species.
C	Sheepnose	Ohio River mainstem, Green River, and Lower Cumberland/Tennessee	Area of influence not within known current range of species.
C	Spectaclecase	Green River, Big South Fork, Lower Tennessee River	Area of influence not within known current range of species.
E	Tan riffleshell	Big South Fork Cumberland River (above Lake Cumberland influence - upstream of Blue Heron)	Area of influence not within known current range of species.
E	Kentucky Cave shrimp	Endemic to groundwater basins of the Mammoth Cave system	Area of influence not within known or historical range of species.
E	American burying beetle	Oak-hickory forests, bottomland forests, grasslands, well-drained soils, developed detritus layers	Area of influence not within known current range of species.
C	Beaver Cave beetle	Endemic to Beaver Cave, Harrison County	Area of influence not within known current range of species.
C	Clifton Cave beetle	Endemic to Clifton Cave, Woodford County	Area of influence not within known current range of species.
C	Icebox Cave beetle	Endemic to Icebox Cave, Bell County	Area of influence not within known current range of species.
C	Louisville Cave beetle	Endemic to Oxmoor Cave, Jefferson County	Area of influence not within known current range of species.
C	Surprising Cave beetle	Endemic to 4 caves in the Mammoth Cave system	Area of influence not within known current range of species.
C	Tatum Cave beetle	Endemic to Tatum Cave, Marion County	Area of influence not within known current range of species.
E	Interior least tern	Nests on Mississippi River sandbars and gravel bars	Area of influence not within known current range of species.
T	Piping plover (migrant only)	Nesting and wintering habitat in coastal and Great Lakes regions	Area of influence not within known current range of species.
T	Blackside dace	Restricted to streams of the middle and upper Cumberland River drainage in Kentucky.	Area of influence not within known current range of species.
C	Cumberland darter	Restricted to upper Cumberland River basin of southeastern Kentucky	Area of influence not within drainage known to support species.
E	Duskytail Darter	Kentucky populations restricted to the Big South Fork Cumberland River (McCreary County)	Area of influence not within known current range of species.
E	Palezone Shiner	Restricted to the Little South Fork Cumberland River (McCreary and Wayne counties) in Kentucky	Area of influence not within known current range of species.
E	Pallid Sturgeon	Restricted to the Mississippi River	Area of influence not within known current range of species.
E	Relict Darter	Restricted to the Bayou de Chien system in western Kentucky (Fulton, Graves, and Hickman counties)	Area of influence not within known current range of species.

<u>Status</u>	<u>Common Name</u>	<u>Associated Habitat</u>	<u>Reason for Dismissal from Further Analysis</u>
E	Virginia big-eared bat	Restricted to nine counties in eastern Kentucky (Elliott, Estill, Jackson, Lee, Meniffee, Morgan, Powell, Rowan, and Wolfe counties)	Area of influence not within known current range of species.

Key: E = Federally endangered T = Federally threatened C = Candidate Species

Because the above-listed species' known ranges are well outside the proposed project's area of influence or because these species' do not have suitable habitat within the area of influence of this proposed project, the proposed action will have **"no effect"** on these species and they will not be discussed in further detail.

Those federally-listed species or federal candidates for listing which are known to occur or have suitable habitat near the area of influence for this proposed project, and thus, have been selected for detailed analysis in this BAE, include the following: Lesquereux's bladderpod, running buffalo clover, bald eagle, gray bat, and Indiana bat.

Six federally endangered species have critical habitat identified in Kentucky. The term "critical habitat" for a threatened or endangered species means the specific areas within the geographical area occupied by the species on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection. The proposed project is located outside the six areas designated as critical habitat for these species. The list of species and critical habitat identified for that species are located in Table 2. Consequently, the proposed action will have **"no effect"** on these six critical habitats and they will not be considered further in this BAE.

VI. Evaluated Species Survey Information

Prior to conducting field surveys, the Kentucky State Nature Preserves Commission was contacted to determine if known sites for listed species occurred within the influence area of the proposed project. A field survey was completed in the project area to assess habitat for candidate, threatened, and endangered (CET) species, as well as conservation species, and rare communities. All of the alternative routes being considered for this proposal were investigated for the BAE. Field investigations completed included visual observations of flora and fauna, implementing mist-netting surveys for bats, and flipping rocks and logs in-search for reptiles, amphibians, and terrestrial land snails. Because all stream crossings will be spanned and no structures will be placed waters of the U.S., no aquatic surveys were necessary for this BAE.

VII. Environmental Baseline for the Species Evaluated in this BAE

Threatened and Endangered Species

Lesquereux's bladderpod (*Lesquerella globosa*)

Lesquereux's bladderpod is a perennial member of the mustard family (Brassicaceae) that occurs in Indiana, Kentucky, and Tennessee. This plant grows on steep, rocky wooded slopes and talus areas and usually is found adjacent to rivers or streams and on south to west facing slopes. It also occurs along cliff tops and bases and cliff ledges. The plants are 3 to 5 decimeters tall and have yellow flowers that appear March through May. The leaves are 1.5 to 3 centimeters (cm) long, 0.2 to 0.6 cm wide, gray-green in color, and densely hairy. The fruits develop soon after flowering and are round, small (0.2 to 0.27 cm in diameter) and become slightly hairy as they mature. These round fruits readily distinguish Lesquereux's bladderpod from other members of the genus *Lesquerella* and from other genera in the family such as *Brassica* and *Barbarea* (Shea 1993).

The Kentucky populations are found within the Bluegrass section of this Province. In a 1992 Status Survey for Short's bladderpod, Shea (1993) reported that there were records of 50 sites that supported or historically supported this species. Of these 50 occurrences, only 26 were found to be extant during the survey. The remaining 24 records were of sites from which the species had been extirpated or lacked sufficient location information to be relocated during the survey. In 1993, Indiana supported one population of the species, Kentucky 14 populations, and Tennessee 11 populations. The Kentucky State Nature Preserves Commission (KSNPC) has, within the past few years, revisited all known Kentucky locations for Short's bladderpod.

In 1998, the KSNPC developed site conservation plans for five of the Kentucky populations. These sites were chosen for conservation plan development because they were believed to be highest quality sites remaining in Kentucky (D. White, KSNPC, pers. comm. 2006). Only one of the Kentucky populations is protected to any degree; that population is in Clark County. Although this population is within a Registered Natural Area, it is of generally poor quality and contained only 2 plants in 1992. White stated large, treeless gaps in the canopy around the outcrops where bladderpod occurs is ideal, and the goal should be to keep the canopy at less than 50% in these areas. The threats to this species include competition with exotic species, trash dumping, closing canopy, and erosion from upland sites. Lesquereux's bladderpod was not discovered during the field investigations for this proposal.

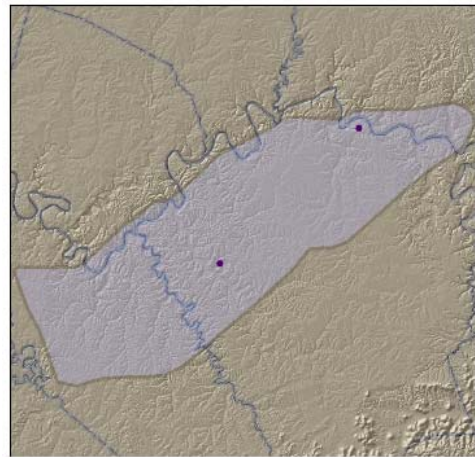
**This description was adapted from the Short's bladderpod Candidate and Listing Priority Assignment Form prepared by Allen Ratzlaff - Asheville, North Carolina FO, January 2001.*

Running Buffalo Clover (*Trifolium stoloniferum*)

Running buffalo clover occurs in mesic habitats of partial to filtered sunlight, where there is a prolonged pattern of moderate periodic disturbance, such as mowing, trampling, or grazing. It is most often found in regions underlain with limestone or other calcareous bedrock. The primary threat to running buffalo clover is habitat alteration. Factors that contribute to this threat include natural forest succession, and subsequent canopy closure, competition by invasive plant species, catastrophic disturbance such as development or road construction, and may include the elimination of bison and other large herbivores.

Running buffalo clover usually acts as a perennial species, forming long stolons that root at the nodes. Plants produce erect flowering stems, 10-30 cm tall that send out long basal runners (stolons). The leaves of the runners have 1-2 cm long ovate-lanceolate stipules, whose tips gradually narrow to a distinctive point (attenuate tip). Erect stems arise from nodes along the stolon, with 2 large trifoliate leaves at their summit, their obovate leaflets 2-3 cm long and wide (Gleason and Cronquist 1991). Flowering stalks (peduncles) originate from the upper axils, producing 9-12 mm round (sub-globose) flower heads with the corolla white, tinged with purple and exceeding the calyx (Gleason and Cronquist 1991). Running buffalo clover flowers from mid-April to June; fruiting occurs from May to July.

Since 1987, numerous directed surveys for this species have resulted in the discovery of 96 populations in 13 counties, all of these in the Bluegrass Region with the exception of one in Jackson County. Since their discovery, 30 populations are now considered extirpated, leaving Kentucky with a total of 66 extant populations. Most populations have been found on alluvial terraces, possibly because these are the most undisturbed forests in a region that has been heavily cleared for agriculture and other land uses. There are a few populations persisting on lawns of large historic homes. Light disturbance such as trail use, periodic grazing, or stream scour is commonly associated with populations in Kentucky. The largest group of populations (ca. 35), occur within about a two-mile area on the Bluegrass Army Depot, Madison County. This population has dramatically declined apparently as a result of a reduction in cattle grazing in an effort to improve water quality (White *et al.* 1999); alternate management techniques are being developing to address these declines. Project biologists surveyed all of the alternative routes considered for this proposal, and no plants of this species were found.



Documented locations within Study Area of Running Buffalo Clover (*Trifolium stoloniferum*)

*This description was adapted from the Running buffalo clover (*Trifolium stoloniferum*) Draft Recovery Plan: First Revision August 2005 Prepared by Sarena M. Selbo U.S. Fish and Wildlife Service Region 3 Reynoldsburg, Ohio and The Running Buffalo Clover Recovery Team For Region 3 U.S. Fish and Wildlife Service Fort Snelling, Minnesota. Map above printed with permission from the KSNPC.*

Bald eagle (*Haliaeetus leucocephalus*)

The bald eagle is a federally threatened species in the southeast. During the 1960's and 1970's, bald eagles declined and disappeared as a breeding bird and greatly reduced numbers of migrant and wintering birds were recorded (Palmer-Ball, 1996). Until recently, bald eagles nested in the western portion of Kentucky with few migrants and wintering birds occurring in the eastern half of the state. Nesting records for this species are now known from many counties scattered throughout the Commonwealth. This rare species has been observed wintering in Kentucky, particularly along large bodies of water.

In 2006, Kentucky was hosting nearly 50 pairs of bald eagles with established nesting territories (Palmer-Ball et. al. 2006). There is always the possibility that a bald eagle may occur anywhere in the state, especially during the winter, and so, it is nearly impossible to say with certainty that a bald eagle would not occasionally visit this project vicinity. For this analysis, it is assumed that bald eagles may occur in the vicinity of the Kentucky River and the larger streams.

Potential threats to the bald eagle include increased noise and disturbance near nests, elimination of forest near large water bodies (lakes and streams), pollution of water which causes a decrease in large fish populations, and poisoning from different chemicals. No bald eagles are known to nest within close proximity of the project action area, but such behavior could occur during the future. Water quality in the Kentucky River and its tributaries will not be altered from the proposed project because no structures will be placed in waters of the U.S.

Gray bat (*Myotis grisescens*)

A.H. Howell (1909) described the gray bat (*Myotis grisescens*) following its discovery in Nickajack Cave, located in central Tennessee. Barbour and Davis (1969) make note of several large populations of gray bats that were thought to have been lost due to disturbance of their cave habitats, and feared a trend toward extinction. Following these losses of habitat and fear of future population declines, the gray bat was listed as endangered in the U. S. Federal Register on 28 April 1976 (Decher and Choate 1995). The known distribution of the gray bat includes the limestone karst regions of Missouri, Kentucky, Tennessee, and Alabama, with scattered populations also occurring in adjacent states.

Over 95% of the known population of gray bats hibernates in only nine caves throughout the range, over half of this number use Fern Cave, in Alabama, as a hibernacula (USFWS 1982). The gray bat requires the coldest available caves for hibernation, typically characterized by large vertical entrances and areas of trapped cold air, making less than 0.1% of known caves suitable (Decher and Choate 1995). In Kentucky, the Coach - James Cave System, a priority one hibernacula contains 300,000+ gray bats during the winter hibernation period. This cave's location in the south central portion of Kentucky within the Mammoth Cave system is a focal point of this species in the state. For the proposed Smith - West Garrard project there are no known hibernacula located within 25 mi (50 km) of the proposed project area.



The summer distribution of this species in Kentucky is not as well known, but expanded mist netting efforts by numerous biologists are increasing this knowledge base. Conservation efforts over the past 25 years, including education of the public and continued habitat protection, especially at the Priority 1 hibernacula, has led to a rebound in the gray bat population. The recovery has been so successful that the gray bat is currently being considered for downlisting by the USFWS.

Gray bats are the largest of the *Myotis* bats found in the eastern United States. They can be distinguished from other bats of the same genus by the long forearm measurement (40 – 46 mm), uniform gray color, calcar not keeled, and wing membrane being attached to the ankle, instead of the base of the toe (Barbour and Davis 1974). *M. grisescens* are one of the few bats, which inhabit caves during the winter as well as during the summer months. Caves are used as hibernacula, as was previously discussed, and caves are also used as summer roosts. Female gray bats congregate in maternity colonies where they will spend the summer raising one young, while males and non-reproductive females gather in “bachelor” colonies in less desirable caves. The females often choose very warm humid caves, with vaulted ceilings where heat is trapped, which helps promote rapid growth of the young (Decher and Choate 1995). Gray bats will often have several roosting caves distributed throughout their summer home range and will move between the caves throughout the summer (USFWS 1982). Besides caves, gray bats are known to use man-made cave-like structures for summer roosts, such as bridges, abandoned mines, and concrete culverts.

Gray bats are known to migrate great distances from their winter hibernacula, up to 325 miles, to their summer roosts (Tuttle 1976). These summer roosts are widely scattered and often located in close proximity to rivers, streams, or other bodies of water where the gray bat typically forages. Gray bats also use river and stream corridors as primary flight corridors relying on the riparian vegetation to help conceal them from nocturnal predators, such as screech owls. They are known to fly 20+ km each night along suitable stream corridors in search of the aquatic insects on which they feed (USFWS 1982).

The closest known maternity caves to the Study Corridor are Overstreet Cave, Christmas Cave, and Daniel Boone’s Cave located in Jessamine County. These caves are associated with the Kentucky River tributaries of Jessamine Creek and Hickman Creek to the north of the project area. USFWS (1982) list these Jessamine County caves as Priority 1 and 2 maternity sites for the gray bat. Besides the maternity caves, there are also records for the gray bat in Clark, Fayette, and Madison Counties recorded in the Kentucky Fish and Wildlife Information System database current to 11 May 2005. Twenty federally endangered gray bats were captured during mist netting activities for this project.

Indiana bat (*Myotis sodalis*)

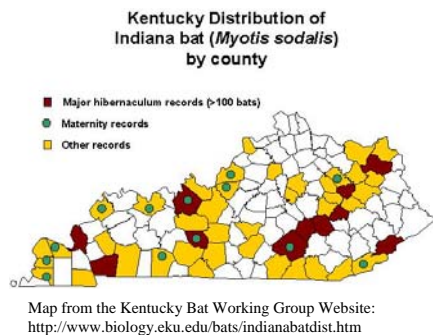
Miller and Allen (1928) described a new species to science, the Indiana bat (*Myotis sodalis*), in 1928, and this species formally attained endangered species status 11 March 1967. Its distribution is in the eastern United States, from Oklahoma, Iowa, and

Wisconsin east to Vermont, and south to northwestern Florida (Barbour and Davis 1969). In Kentucky, the Indiana bat's wintering distribution is fairly well documented and includes several caves throughout the karst regions of the state (Palmer-Ball et al. 1988). Kentucky contains three Priority One hibernacula (Priority One hibernacula are hibernation sites with a recorded population >30,000 bats since 1960) and houses a significant portion of the total population of Indiana bats (USFWS 1999). For the proposed Smith – West Garrard project there are no known hibernacula located within 25 mi (40 km) of the proposed project area. The closest known hibernacula are located in northern Jackson County to the south and western Estill County to the east. The summer distribution of this species in Kentucky is not as well known, but expanded mist netting efforts by numerous biologists are increasing this knowledge base.



Indiana bats use caves and abandoned mine portals as hibernacula. After hibernation, females leave the hibernacula and typically fly north and northwest to nursery sites to raise their young. Although some males may leave with the females, others stay near or in the hibernacula throughout the summer months (Barbour and Davis 1969). After leaving the hibernacula, Indiana bats are known to roost under the exfoliating bark of dead and live trees (MacGregor et al. 1999), and they have been documented using tree cavities as well (Gardner et al. 1991).

It has also been shown that Indiana bats exhibit fidelity for summer roost trees (Garner and Gardner 1992). Early studies indicated that floodplain forests were the significant habitat for Indiana bats (Humphrey et al. 1977), but recent studies indicate that this species uses both upland and riparian habitats (Gardner et al. 1991 and MacGregor et al. 1999). Most known maternity roosts have been located in wooded areas with a semi-open canopy or along forest edges. Maternity colonies are initially composed of 50-100 females, each of which bears one young in May or June. Maternity colonies typically roost under the exfoliating bark of dead or live trees, but they have also been found to use cavities as temporary roosts (Gardner et al. 1991, Kurta and Williams 1992, and Callahan 1993).



In 2002, EKPC biologists discovered the closest maternity record to the proposed Smith-West Garrard project area when mist netting for the Blevins Valley Substation and Tap project in Bath County, Kentucky. This maternity record is approximately 35 miles (56 km) to the east of the proposed project area. There are several records for the Indiana bat from the northern portions of Jackson County, approximately 25 miles (40 km) to the

southeast of the project area, but the majority of these are in relation to hibernaculum in the area. The next closest known Indiana Bat records are county occurrences for Jessamine and Fayette Counties, which are recorded in the Kentucky Fish and Wildlife Information System database current to 11 May 2005. No Indiana bats were captured during the mist-netting activities for this project.

VIII. Effects of Proposed Management Action on Each Species and Segment of Proposed Critical Habitat Evaluated

Candidate, Threatened, and Endangered Species

Lesquereux's bladderpod

- Direct Effects

Project biologists surveyed all of the alternative routes considered for this proposal, and no plants of this species were found. Since Lesquereux's bladderpod has not been documented from the project area, no adverse direct effects are expected from this project.

- Indirect Effects

Because the species does not occur in the area of influence, no indirect effects are expected from this project.

- Cumulative

Currently, EKPC is aware of plans by the KY Department of Transportation to modify the US 27 road corridor in western Garrard County. No other known state, other federal agency, or private activities are planned for the project action area. Because the species does not occur in the area of influence, no cumulative effects for Lesquereux's bladderpos are expected from this project.

Running Buffalo Clover

- Direct Effects

Project biologists surveyed all of the alternative routes considered for this proposal, and no plants of this species were found. Many areas have been cleared of all trees and no longer provide the filtered sunlight preferred by this species. Other areas have become overgrown with Chinese stiltgrass (*Microstegium vimineum*) and shrubs, creating too much shade for the clover to grow. A few of these areas contained open woods and evidence of grazing, but thorough surveys of the habitat yielded no running buffalo clover. Since running buffalo clover was not been documented from the project area, it is very unlikely that the plant occurs here. Because the species does not occur in the area of influence, no adverse direct effects are expected from this project.

- Indirect Effects

Since the species does not occur in the area of influence, no indirect effects are expected from this project.

- Cumulative

Currently, EKPC is aware of plans by the KY Department of Transportation to modify the US 27 road corridor in western Garrard County. No other known state, other federal agency, or private activities are planned for the project action area. Because the species does not occur in the area of influence, no cumulative effects for running buffalo clover are expected from this project.

Bald eagle

- **Direct Effects**

The bald eagle has not been documented from the area of influence. Also, based upon the information provided by Palmer-Ball et. al. (2006), no resident nesting birds are known to occur along the Kentucky River or its larger tributaries. It is also very unlikely that a migrant bird would be flying through the area during construction. Placing poles, hanging electric line, and felling trees, etc. would most likely prevent an eagle from visiting the site during construction, thus reducing the potential of an adverse direct effect. Because of the low possibility of an eagle occurring at the site during construction, no adverse direct effects are expected from this project.

- **Indirect Effects**

Indirect effects to the bald eagle are possible, but very unlikely because of the mere absence of the bird and location and design of project. Potential indirect effects to the bald eagle from this project include death or injury to birds from collisions with electric lines and poles, and electrocution. The electric line is designed so it will be below the canopy of adjacent forest, which reduces potential for collisions. Since it is almost impossible to guarantee that no bald eagles will migrate, over-winter, or establish nests in the future near the project area, thus potentially flying into the electric lines, it is determined that this project is not likely to adversely affect the bald eagle.

- **Cumulative**

Currently, EKPC is aware of plans by the KY Department of Transportation to modify the US 27 road corridor in western Garrard County. No other known state, other federal agency, or private activities are planned for the project action area. It is unlikely that the bald eagle occurs in the project area, but still possible that migrants and over-wintering individuals frequent the project area. Because the species does not occur in the area of influence, no cumulative effects for bald eagles are expected from this project.

Gray bat

- **Direct Effects**

Twenty federally endangered gray bats (*Myotis grisescens*) were captured during mist netting activities for this project. Seven males were captured, one adult and six juveniles, while thirteen females were captured, eleven juveniles and two reproductive adults. The gray bat roosts in limestone caves, storm sewers, and underneath concrete bridges and forages primarily over streams and reservoirs. Occasionally they will forage in upland forest. Project biologists surveyed the alternative routes being considered for this

proposal, and no gray bat roosts or potential roosting habitat was discovered in the area of influence.

Below are measures to avoid and minimize direct effects on this endangered bat species as a result of the proposed action. They were developed based upon the biology of the gray bat and its habitat requirements to complete its life cycle. Mitigation measure #1 avoids impacting the behavioral patterns of the gray bat while foraging. Mitigation measures #2 through #7 deal specifically with protecting the water quality to ensure productivity of the food source (aquatic invertebrates) that the gray bat feeds upon, thus allowing continuous use the habitat by gray bats during the construction phase of the project. Finally, mitigation measure #8 would monitor the erosion control measures and provide adequate feedback that this method is best for both protection of water quality and the scheduling of ROW construction.

- 1) The majority of construction activities will occur only during daylight hours and cease prior to those times of day (sunset through nighttime hours) when the gray bats are utilizing the stream corridors for foraging.
- 2) The ROW crossings will span streams with no poles placed in the stream corridor. Additionally, there will be no alteration or realignment of the stream channels.
- 3) No equipment will be allowed within or operate in the natural stream channel (i.e., being placed upon the natural substrate of the stream) and no excavation of stream channels will occur.
- 4) Equipment cleaning/staging areas will be located such that runoff from these areas will not enter any streams.
- 5) A Storm Water Pollution Prevention Plan would be developed for this project, and erosion and sediment control best management practices will be formulated and made a part of the final contract.
- 6) Erosion and sediment controls will include, but are not necessarily limited to, silt fences, straw bales, sediment basins, and rock check dams. These measures will be used singly or in combination to provide the maximum level of erosion control and protection.
- 7) Temporary seeding and mulching of all disturbed areas will be conducted immediately upon work being completed in those areas. Especially, when there are time delays between construction activities due to such things as the weather, scheduling, etc.
- 8) Water quality standards will be maintained throughout the entire stream corridors in accordance with and federal or state agency required permits. The resident foreman will monitor stream crossing on a weekly basis during the appropriate

construction phase, and inform the environmental coordinator regarding necessary erosion control measure maintenance.

Due to the absence of summer or winter roosting habitat in the area of influence and the mitigation measures that will be implemented for this proposal, no direct adverse effects are expected for the gray bat from this project.

- Indirect Effects

As mentioned previously, this bat was documented in the project area. Due to the mitigation measures listed above, no indirect effects to the gray bat are expected from implementing this project.

- Cumulative Effects

Currently, EKPC is aware of plans by the KY Department of Transportation to modify the US 27 road corridor in western Garrard County. No other known state, other federal agency, or private activities are planned for the project action area. Due to the measures identified above, no cumulative effects for the gray bat are expected from this project.

Indiana bat

- Direct Effects

Because Indiana bats are most vulnerable to the effects of most projects during two stages of their life (i.e., while hibernating or preparing to hibernate, and while immobile during their first few weeks of life and in the maternity trees), this analysis focuses primarily upon the effects the proposed project may have upon Indiana bats particularly during these two periods of their life. With regards to the Indiana bat maternity period (May 1-August 15), this proposed project is not expected to have any direct adverse effects to Indiana bats during this stage of their life cycle. Potential roost trees occur within or in stands adjacent to the project area. Therefore, EKPC initiated a mist-netting survey that was based upon a plan which was reviewed by USFWS personnel and found to be an adequate effort for determining the presence or absence of this species. The results of this mist netting survey show that no Indiana bats were captured in the vicinity of the proposed powerline corridor from 22 May through 2 August 2006.

The potential for adverse effects to Indiana bats during their hibernation (Dec 1- March 31) and pre-hibernation (Sept 1- Dec 1) period is even lower than that for their maternity season. This potential is considered low because during the pre-hibernation period, Indiana bats generally congregate close to their hibernacula and no Indiana bat hibernacula have been found within 5 miles of the project vicinity, and no Indiana bat hibernacula or potential wintering habitat were discovered in the area of influence. Therefore, no direct effects to this species are expected from the implementation of this proposal.

- Indirect Effects

Additional impacts, beyond those previously disclosed, are not anticipated. Because no hibernacula occurs within 5 miles of the proposed project area, no indirect effects are

expected to the species from this project. The project will convert some forested habitat into a 150-foot wide strip of herbaceous vegetation. The elimination of forest will reduce potential summer roosting habitat, but such habitat is not lacking in the area.

- Cumulative Effects

Currently, EKPC is aware of plans by the KY Department of Transportation to modify the US 27 road corridor in western Garrard County. No other known state, other federal agency, or private activities are planned for the project action area. Since surveys indicate the probable absence of the species, the effects from this project will not add to the cumulative effects for the Indiana bat population.

Critical Habitat

Table 4. Critical Habitat in KY.

Critical Habitat in KY
<i>Critical Habitat for Braun's rockcress was designated in 2004 - 22 areas (1600 acres) in Kentucky and Tennessee; 14 areas in Franklin County and 3 in Owen County (all areas were occupied) - other areas in Rutherford and Wilson counties, Tennessee (69 FR 31460-31496, June 2004)</i>
<i>Critical Habitat was designated for the Cumberland elktoe in 2004 for five Kentucky areas: Rock Creek, McCreary County (river miles [RM] 4-11, mth of White Oak upstream to mth Dolan Branch); Big South Fork Cumberland River, McCreary County, KY (27 RM in KY and TN plus additional streams in TN); Sinking Creek, Laurel County (8 RM: mth upstream to mth Laurel Branch); Marsh Creek, McCreary County (15 RM: mouth to KY 92 bridge); and Laurel Fork (2 RM: state line and upstream - also 3 RM downstream in Tennessee, Claiborne County); CH designated for other areas in Tennessee (68 FR 33234-33282).</i>
<i>Critical Habitat was designated for the Cumberlandian combshell in 2004 for two Kentucky areas: Big South Fork Cumberland River, McCreary County, KY (27 RM in KY and TN plus additional streams in TN); and Buck Creek, Pulaski County (36 RM, KY 192 bridge upstream to the KY 328 bridge); other CH designated in AL, MS, TN, and VA (69 FR 53136-53180, Aug. 2004).</i>
<i>Critical Habitat was designated for the oyster mussel in 2004 for two Kentucky areas: Big South Fork Cumberland River, McCreary County, KY (27 RM in KY and TN plus additional streams in TN); and Buck Creek, Pulaski County (36 RM, KY 192 bridge upstream to the KY 328 bridge); other CH designated in AL, MS, TN, and VA (69 FR 53136-53180, Aug. 2004).</i>
<i>Critical Habitat was designated for the Kentucky cave shrimp in 1983 – Roaring River Passage of Mammoth Cave, Mammoth Cave national Park (48 FR 46337-46342, Oct. 1983)</i>
<i>Critical Habitat was designated for the Indiana bat in 1976 - Bat Cave (Carter County) and Coach Cave (Edmonson County) have been designated as Critical Habitat (41 FR 41914-41916, Sept. 1976)</i>

- All Effects (Direct, Indirect, and Cumulative)

Since the proposed project is located outside the boundaries of these critical habitats, no direct, indirect, or cumulative effects will occur from the proposed project.

IX. Determination(s) of Effect & Rationale

Federal Candidates for Listing and Federally Threatened and Endangered Species

The proposed project, construction of 35 –37 miles of a 345kV transmission line with a 150-foot wide right-of-way and maintenance of the right-of-way, and all of its foreseeable results is expected to have **no adverse effect** upon the following species:

Table 5. CET Species with No Adverse Effect

Common Name	Common Name	Common Name
Braun's rockcress	Northern riffleshell	Louisville Cave beetle
Chaffseed	Orangefoot pimpleback	Surprising Cave beetle
Cumberland rosemary	Oyster mussel	Tatum Cave beetle
Cumberland sandwort	Pink mucket	Bachman's warbler
Lesquereux's bladderpod	Rayed Bean	Interior least tern
Price's potato-bean	Ring pink	Ivory-billed woodpecker
Running buffalo clover	Rough pigtoe	Piping plover (migrant only)
Short's goldenrod	Scaleshell	Red-cockaded woodpecker
Virginia spiraea	Sheepnose	Whooping Crane
White fringeless orchid	Slabside pearlymussel	Blackside dace
White-haired goldenrod	Spectaclecase	Cumberland darter
Catspaw	Tan riffleshell	Duskytail Darter
Clubshell	Tubercled blossom	Palezone Shiner
Cracking pearlymussel	White catspaw	Pallid Sturgeon
Cumberland bean	White wartyback	Relict Darter
Cumberland elktoe	Winged mapleleaf	Eastern cougar
Cumberlandian combshell	Yellow blossom	Gray wolf
Dromedary pearlymussel	Kentucky Cave shrimp	Indiana bat
Fanshell	American burying beetle	Red wolf
Fat pocketbook	Beaver Cave beetle	Virginia big-eared bat
Fluted kidneyshell	Clifton Cave beetle	
Littlewing pearlymussel	Icebox Cave beetle	

Rationale: This determination of effect is based upon one or more of the following reasons:

- The species is presumed extirpated from KY and does not have suitable habitat within the area of influence of this project.
- The area of influence is not within the known current range of this species and there is very little chance that the species occurs in the area of influence.
- The species may occur within the project area, but proposed activities will not affect the species.
- Surveys in appropriate habitat for the species failed to document presence.

The proposed project, construction of 35 –37 miles of a 345kV transmission line with a 150-foot wide right-of-way and maintenance of the right-of-way, and all of its foreseeable results is expected to **not likely adversely affect** the following species:

Rationale: This determination of effect is based upon the following reasons:

- The bald eagle is not known from within the influence of the project area, but could be present during migration or winter. If so, the species could fly into the overhead electric line. The electric line will be below the forest canopy, thus potentially reducing collisions. It is also possible that bald eagles may eventually become permanent residents and use the riparian corridor of Kentucky River and its larger tributaries. If bald eagles start using the Kentucky River or its larger tributaries, they may land on the poles and potentially become electrocuted. Currently, no bald eagles are known from within the project area and the chances of eagles becoming established and flying into the electric line or becoming electrocuted are small. Deaths of bald eagles attributed to this type of electric line are extremely rare in the eastern United States.
- Gray bats: For this species, disturbances at their hibernacula are of special concern. This species was documented in the project area, but field surveys failed to locate any suitable roosting habitat in the area of influence. Also, there are no known hibernacula within five miles of the area of influence for this project. In addition EKPC will be utilizing measures designed to avoid and minimize direct effects on this endangered bat species.

They were developed based upon the biology of the gray bat and its habitat requirements to complete its life cycle. Mitigation measure #1 avoids impacting the behavioral patterns of the gray bat while foraging. Mitigation measures #2 through #7 deal specifically with protecting the water quality to ensure productivity of the food source (aquatic invertebrates) that the gray bat feeds upon, thus allowing continuous use the habitat by gray bats during the construction phase of the project. Finally, mitigation measure #8 would monitor the erosion control measures and provide adequate feedback that this method is best for both protection of water quality and the scheduling of ROW construction.

- 1) The majority of construction activities will occur only during daylight hours and cease prior to those times of day (sunset through nighttime hours) when the gray bats are utilizing the stream corridors for foraging.
- 2) The ROW crossings will span streams with no poles placed in the stream corridor. Additionally, there will be no alteration or realignment of the stream channels.
- 3) No equipment will be allowed within or operate in the natural stream channel (i.e., being placed upon the natural substrate of the stream) and no excavation of stream channels will occur.

- 4) Equipment cleaning/staging areas will be located such that runoff from these areas will not enter any streams.
- 5) A Storm Water Pollution Prevention Plan would be developed for this project, and erosion and sediment control best management practices will be formulated and made a part of the final contract.
- 6) Erosion and sediment controls will include, but are not necessarily limited to, silt fences, straw bales, sediment basins, and rock check dams. These measures will be used singly or in combination to provide the maximum level of erosion control and protection.
- 7) Temporary seeding and mulching of all disturbed areas will be conducted immediately upon work being completed in those areas. Especially, when there are time delays between construction activities due to such things as the weather, scheduling, etc.
- 8) Water quality standards will be maintained throughout the entire stream corridors in accordance with and federal or state agency required permits. The resident foreman will monitor stream crossing on a weekly basis during the appropriate construction phase, and inform the environmental coordinator regarding necessary erosion control measure maintenance.

Critical Habitat

The proposed project, construction of 35 –37 miles of 345kV transmission line with a 150-foot wide right-of-way and maintenance of the right-of-way, and all of its foreseeable results is expected to have **no effect** upon the following Critical Habitat:

Table 6. Critical habitat in Kentucky

Critical Habitat in KY
<i>Critical Habitat for Braun's rockcress was designated in 2004 - 22 areas (1600 acres) in Kentucky and Tennessee; 14 areas in Franklin County and 3 in Owen County (all areas were occupied) - other areas in Rutherford and Wilson counties, Tennessee (69 FR 31460-31496, June 2004)</i>
<i>Critical Habitat was designated for the Cumberland elktoe in 2004 for five Kentucky areas: Rock Creek, McCreary County (river miles [RM] 4-11, mth of White Oak upstream to mth Dolan Branch); Big South Fork Cumberland River, McCreary County, KY (27 RM in KY and TN plus additional streams in TN); Sinking Creek, Laurel County (8 RM: mth upstream to mth Laurel Branch); Marsh Creek, McCreary County (15 RM: mouth to KY 92 bridge); and Laurel Fork (2 RM: state line and upstream - also 3 RM downstream in Tennessee, Claiborne County); CH designated for other areas in Tennessee (68 FR 33234-33282).</i>
<i>Critical Habitat was designated for the Cumberlandian combshell in 2004 for two Kentucky areas: Big South Fork Cumberland River, McCreary County, KY (27 RM in KY and TN plus additional streams in TN); and Buck Creek, Pulaski County (36 RM, KY 192 bridge upstream to the KY 328 bridge); other CH designated in AL, MS, TN, and VA (69 FR 53136-53180, Aug. 2004).</i>
<i>Critical Habitat was designated for the oyster mussel in 2004 for two Kentucky areas: Big South Fork Cumberland River, McCreary County, KY (27 RM in KY and TN plus additional streams in TN); and Buck Creek, Pulaski County (36 RM, KY 192 bridge upstream to the KY 328 bridge); other CH designated in AL, MS, TN, and VA (69 FR 53136-53180, Aug. 2004).</i>

Critical Habitat in KY
<i>Critical Habitat was designated for the Kentucky cave shrimp in 1983 – Roaring River Passage of Mammoth Cave, Mammoth Cave national Park (48 FR 46337-46342, Oct. 1983)</i>
<i>Critical Habitat was designated for the Indiana bat in 1976 - Bat Cave (Carter County) and Coach Cave (Edmonson County) have been designated as Critical Habitat (41 FR 41914-41916, Sept. 1976)</i>

Rationale: This determination of effect is based upon one reason. The proposed project is located outside of these areas.

X. Mitigation Measures

Below are measures to further avoid and minimize effects on endangered bat species as a result of the proposed action. They were developed based upon the biology of the gray bat and its habitat requirements to complete its life cycle. Mitigation measure #1 avoids impacting the behavioral patterns of the gray bat while foraging. Mitigation measures #2 through #7 deal specifically with protecting the water quality to ensure productivity of the food source (aquatic invertebrates) that the gray bat feeds upon, thus allowing continuous use the habitat by gray bats during the construction phase of the project. Finally, mitigation measure #8 would monitor the erosion control measures and provide adequate feedback that this method is best for both protection of water quality and the scheduling of ROW construction.

- 1) The majority of construction activities will occur only during daylight hours and cease prior to those times of day (sunset through nighttime hours) when the gray bats are utilizing the stream corridors for foraging.
- 2) The ROW crossings will span streams with no poles placed in the stream corridor. Additionally, there will be no alteration or realignment of the stream channels.
- 3) No equipment will be allowed within or operate in the natural stream channel (i.e., being placed upon the natural substrate of the stream) and no excavation of stream channels will occur.
- 4) Equipment cleaning/staging areas will be located such that runoff from these areas will not enter any streams.
- 5) A Storm Water Pollution Prevention Plan would be developed for this project, and erosion and sediment control best management practices will be formulated and made a part of the final contract.
- 6) Erosion and sediment controls will include, but are not necessarily limited to, silt fences, straw bales, sediment basins, and rock check dams. These measures will be used singly or in combination to provide the maximum level of erosion control and protection.

- 7) Temporary seeding and mulching of all disturbed areas will be conducted immediately upon work being completed in those areas. Especially, when there are time delays between construction activities due to such things as the weather, scheduling, etc.
- 8) Water quality standards will be maintained throughout the entire stream corridors in accordance with and federal or state agency required permits. The resident foreman will monitor stream crossing on a weekly basis during the appropriate construction phase, and inform the environmental coordinator regarding necessary erosion control measure maintenance

XI. Preparer(s)

I prepared this Biological Assessment and Evaluation and made the effects determinations.

Name: Joe Settles

Date: December 13, 2006

Position: Biologist

Organization: East Kentucky Power Cooperative

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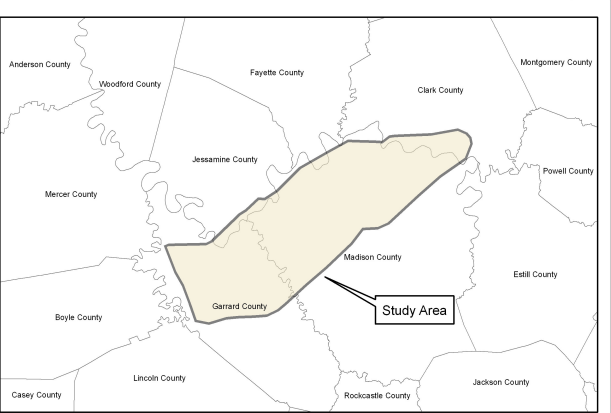
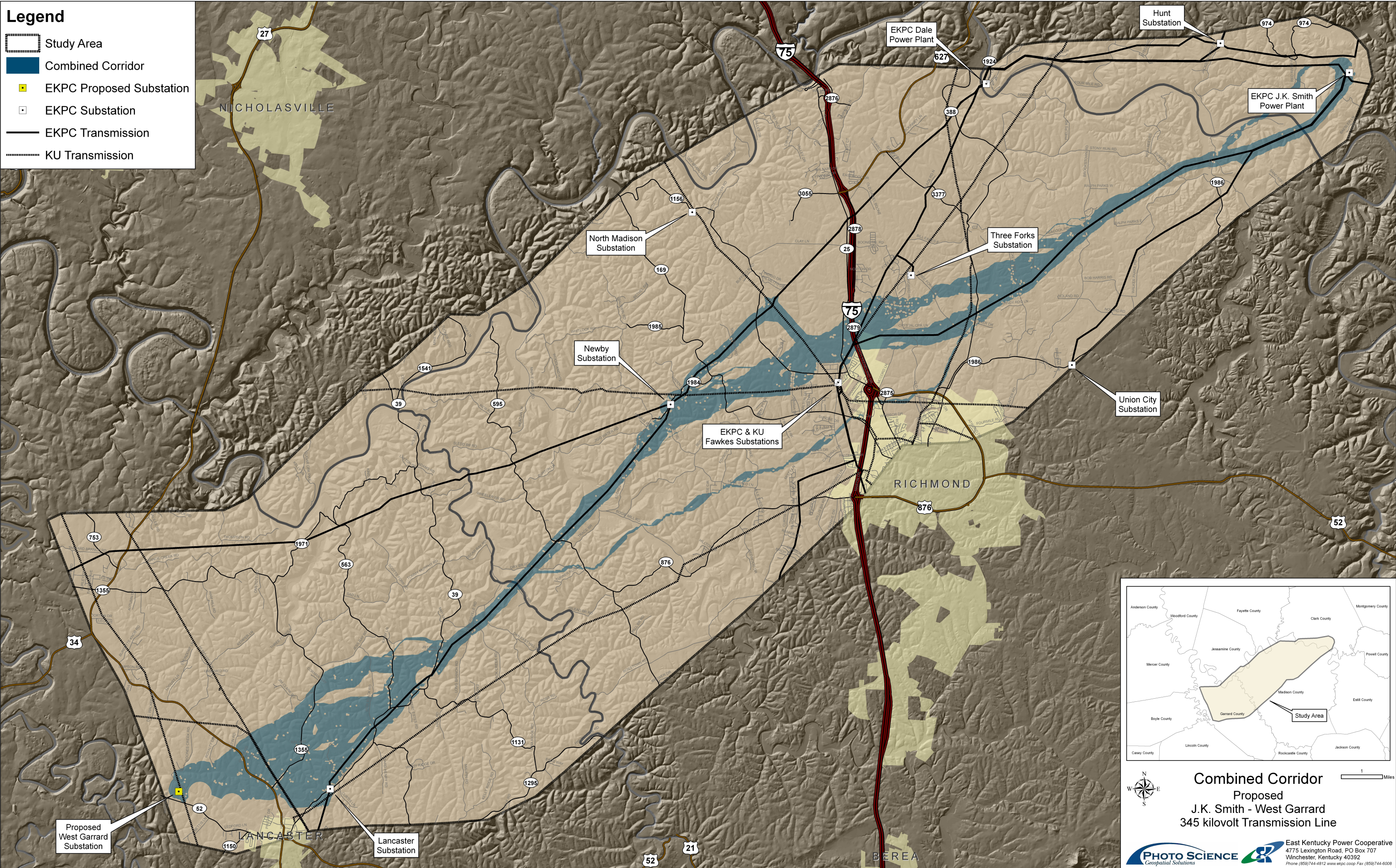
Mike Armstrong, U.S. Fish and Wildlife Service. Frankfort, KY.

Mindi Lawson, U.S. Fish and Wildlife Service. Frankfort, KY.

Appendix 1. Document Figures 1 thru 3

Legend

- Study Area
- Combined Corridor
- EKPC Proposed Substation
- EKPC Substation
- EKPC Transmission
- KU Transmission



Combined Corridor
Proposed
J.K. Smith - West Garrard
345 kilovolt Transmission Line

1 Miles

PHOTO SCIENCE
Geospatial Solutions

East Kentucky Power Cooperative
4775 Lexington Road, PO Box 707
Winchester, Kentucky 40392
Phone (859)744-4812 www.ekpc.coop Fax (859)744-6008

Legend

Apartment/High Density

Commercial/Industrial

Forested

Horse Farms

Hydrography

Other

Other Livestock

Planted Pine

Recreational

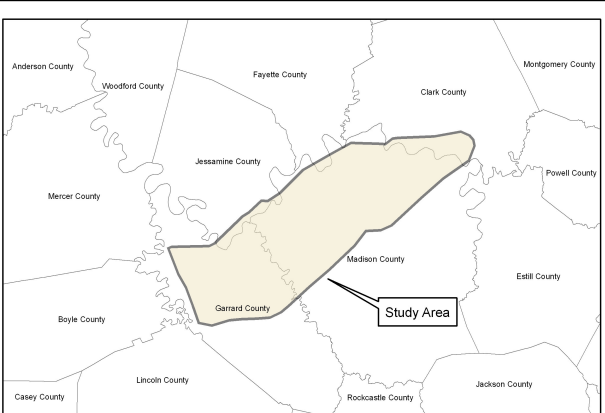
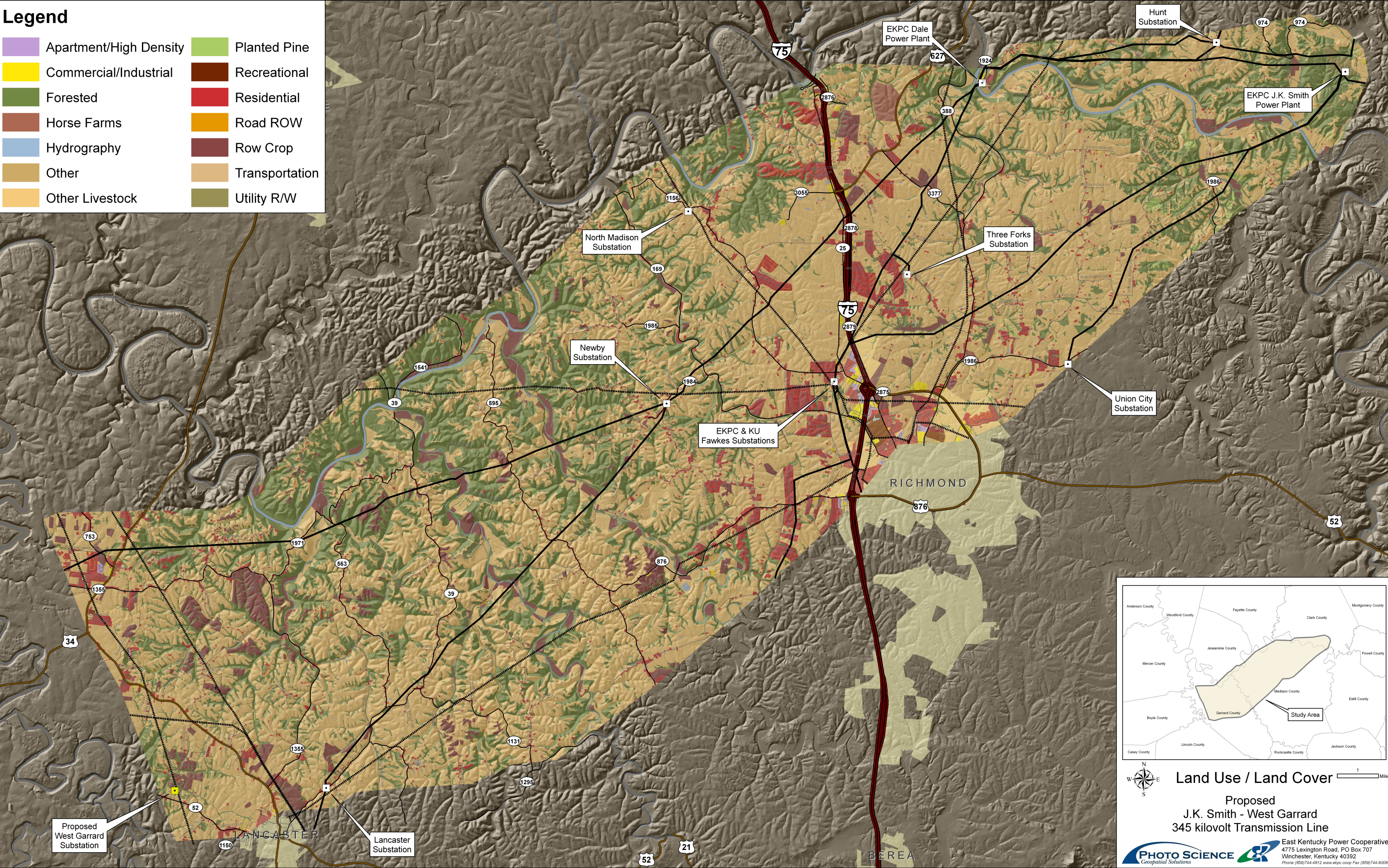
Residential

Road ROW

Row Crop

Transportation

Utility R/W



Land Use / Land Cover

Proposed
J.K. Smith - West Garrard
345 kilovolt Transmission Line

PHOTO SCIENCE

Geospatial Solutions

East Kentucky Power Cooperative
4775 Lexington Road, PO Box 707
Winchester, Kentucky 40392
Phone (859)744-4812 www.ekpc.coop Fax (859)744-6008

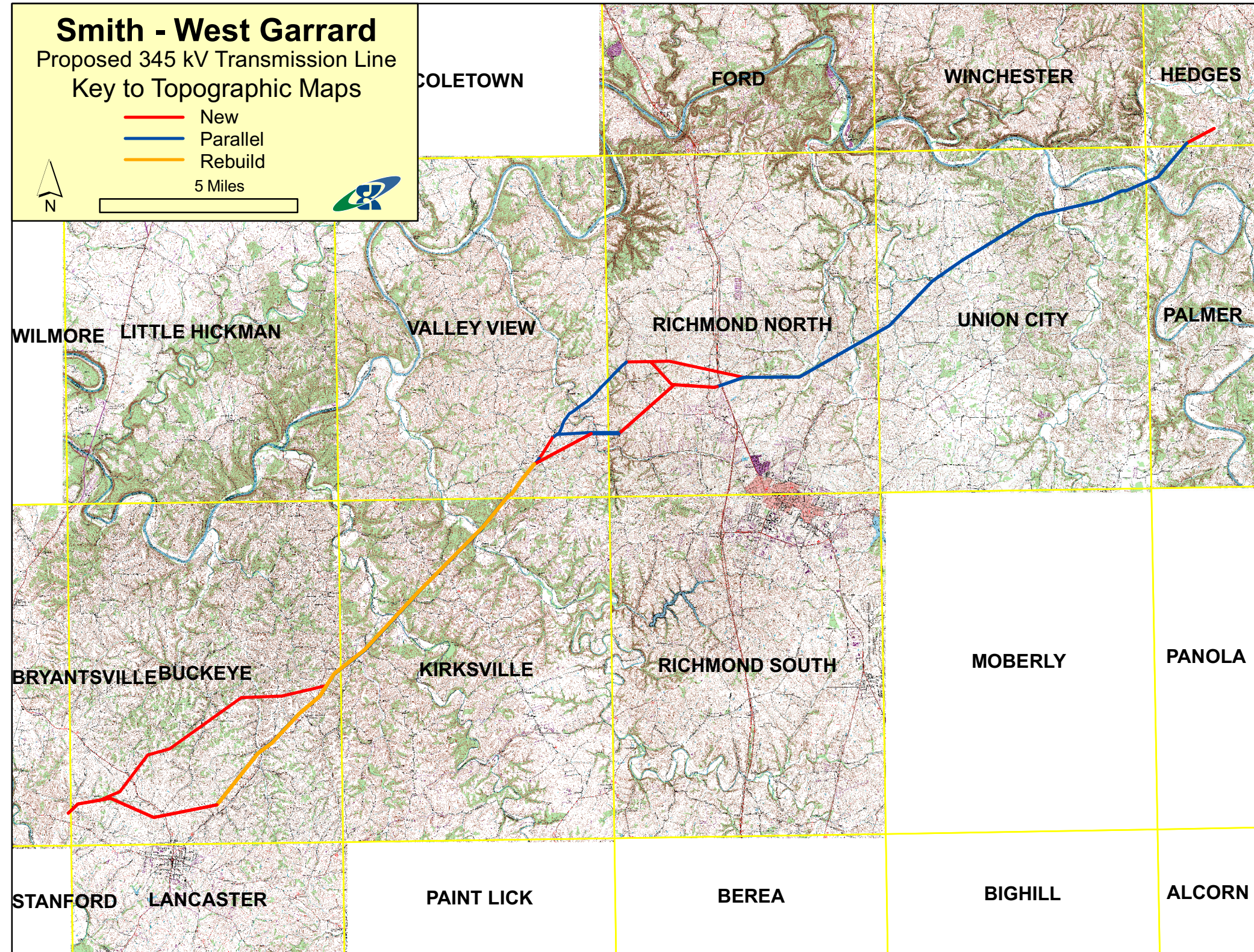
Smith - West Garrard

Proposed 345 kV Transmission Line

Key to Topographic Maps

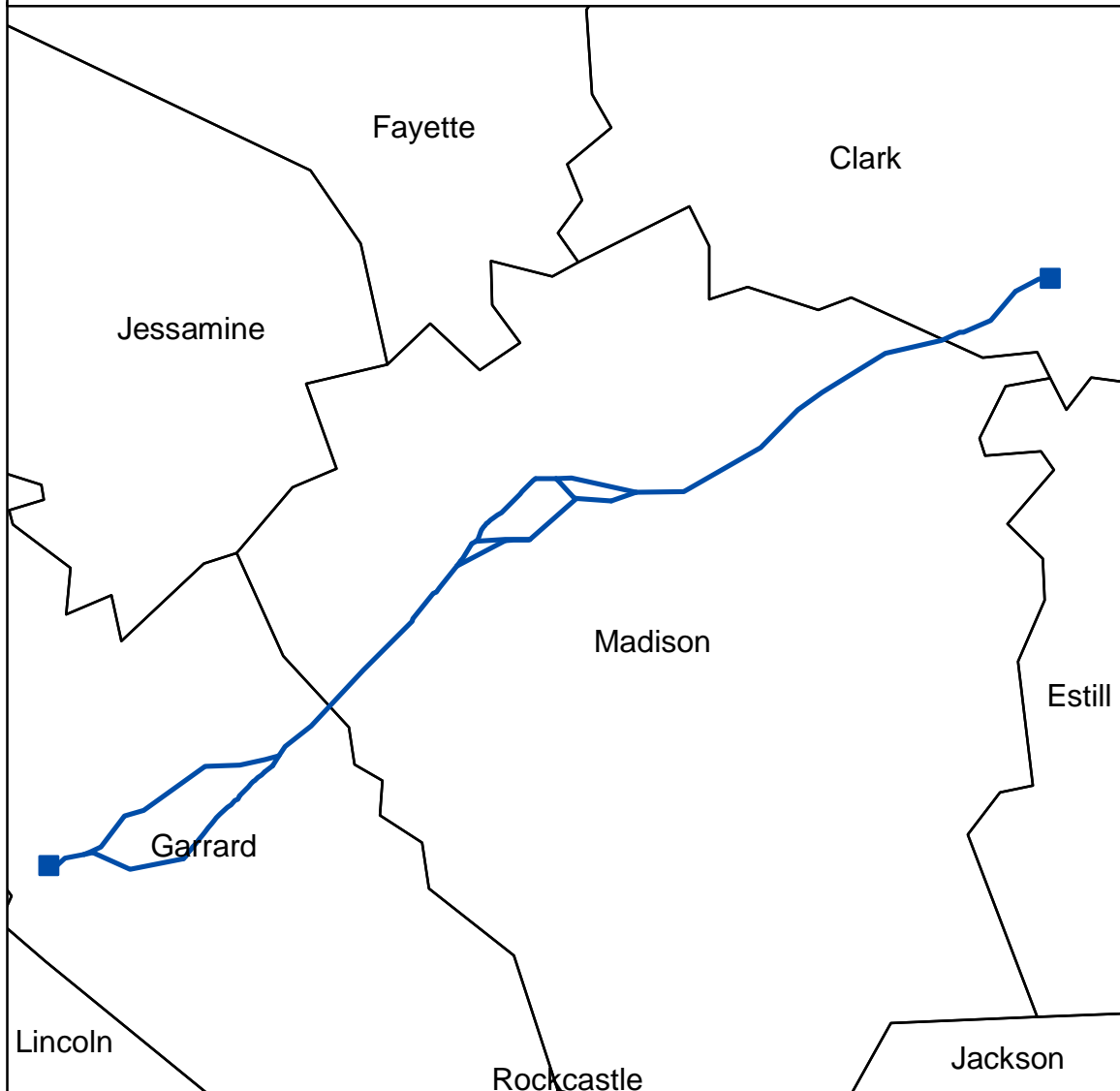
-  New
-  Parallel
-  Rebuild

5 Miles



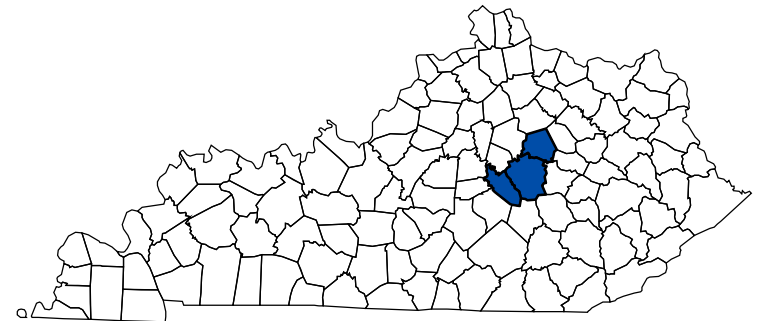
Appendix 2. Alternative Routes Maps

PROJECT AREA LOCATION MAP



10

Miles



Proposed Substation Sites



Proposed Transmission
Line Route

Smith - West Garrard
Proposed 345 kV Double Circuit
Transmission Line and Substation Project
Garrard, Madison, and Clark Counties, KY
Project No. 21466



EAST KENTUCKY POWER COOPERATIVE

P.O. Box 707

Winchester, KY 40392-0707

Smith - West Garrard

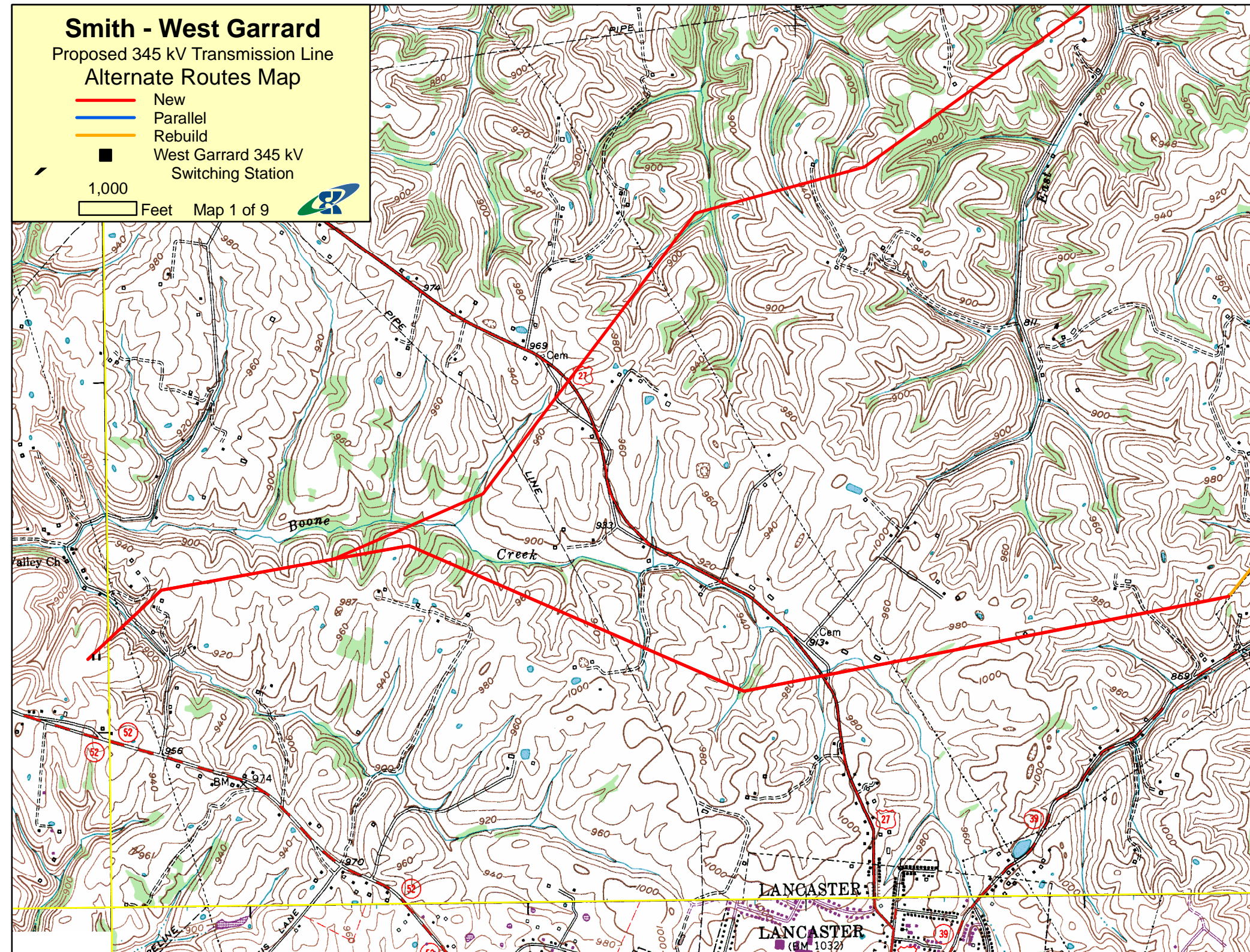
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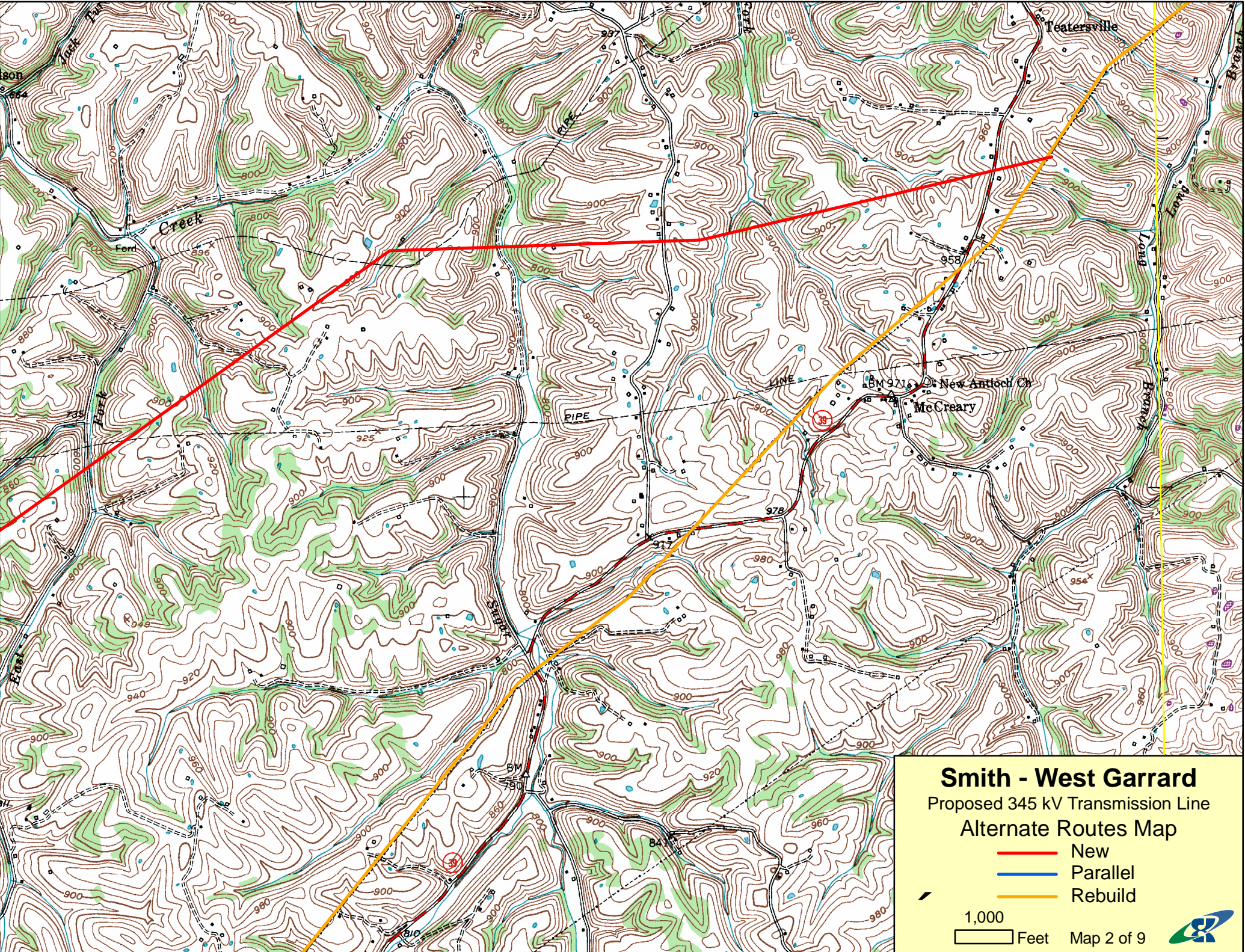
Alternate Routes Map

- New
- Parallel
- Rebuild
- West Garrard 345 kV Switching Station

1,000

Feet Map 1 of 9





Smith - West Garrard

Proposed 345 kV Transmission Line

Alternate Routes Map

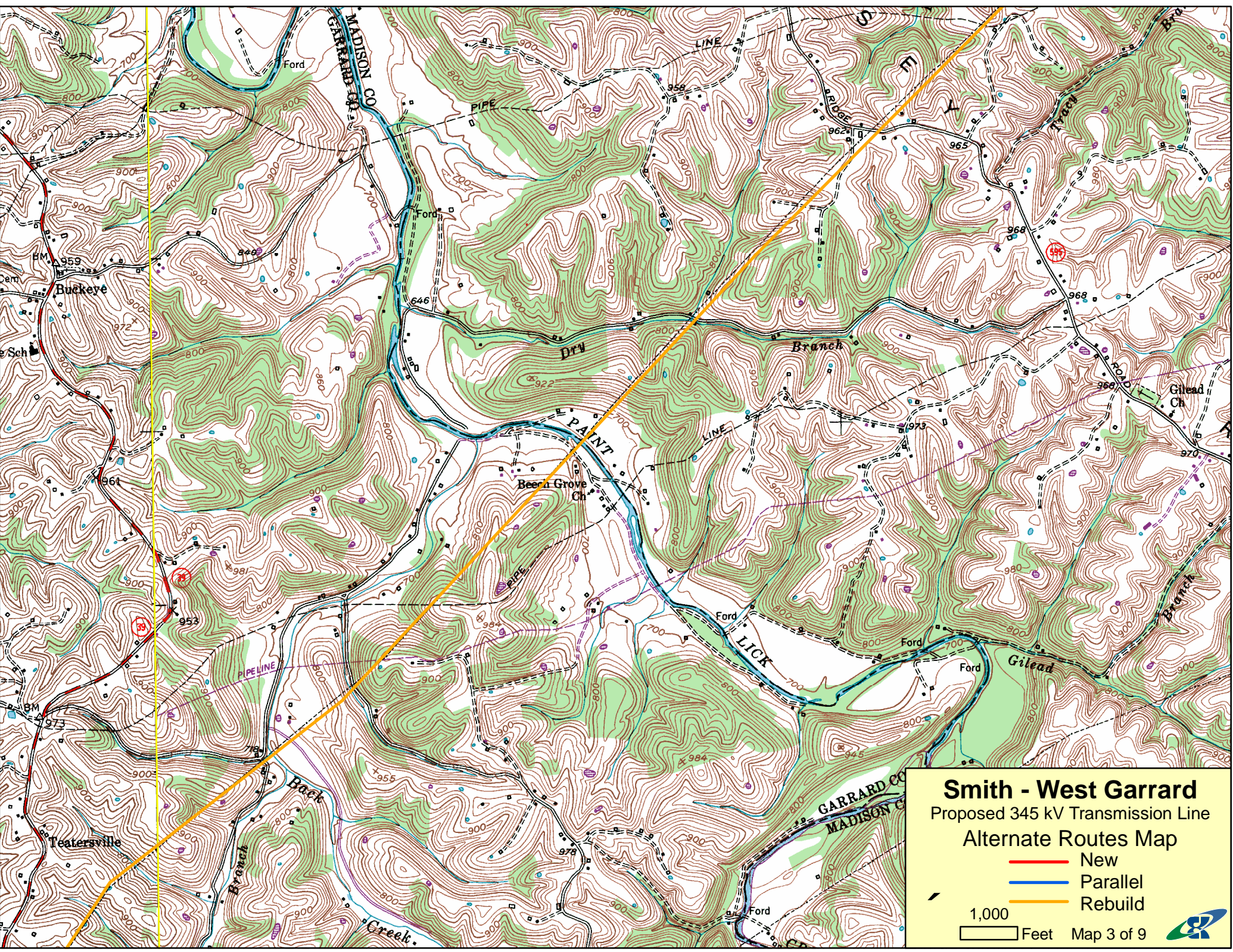
- New
- Parallel
- Rebuild

1,000

Feet

Map 2 of 9





Smith - West Garrard

Proposed 345 kV Transmission Line

Alternate Routes Map

- New
- Parallel
- Rebuild

1,000



Feet Map 3 of 9



Smith - West Garrard

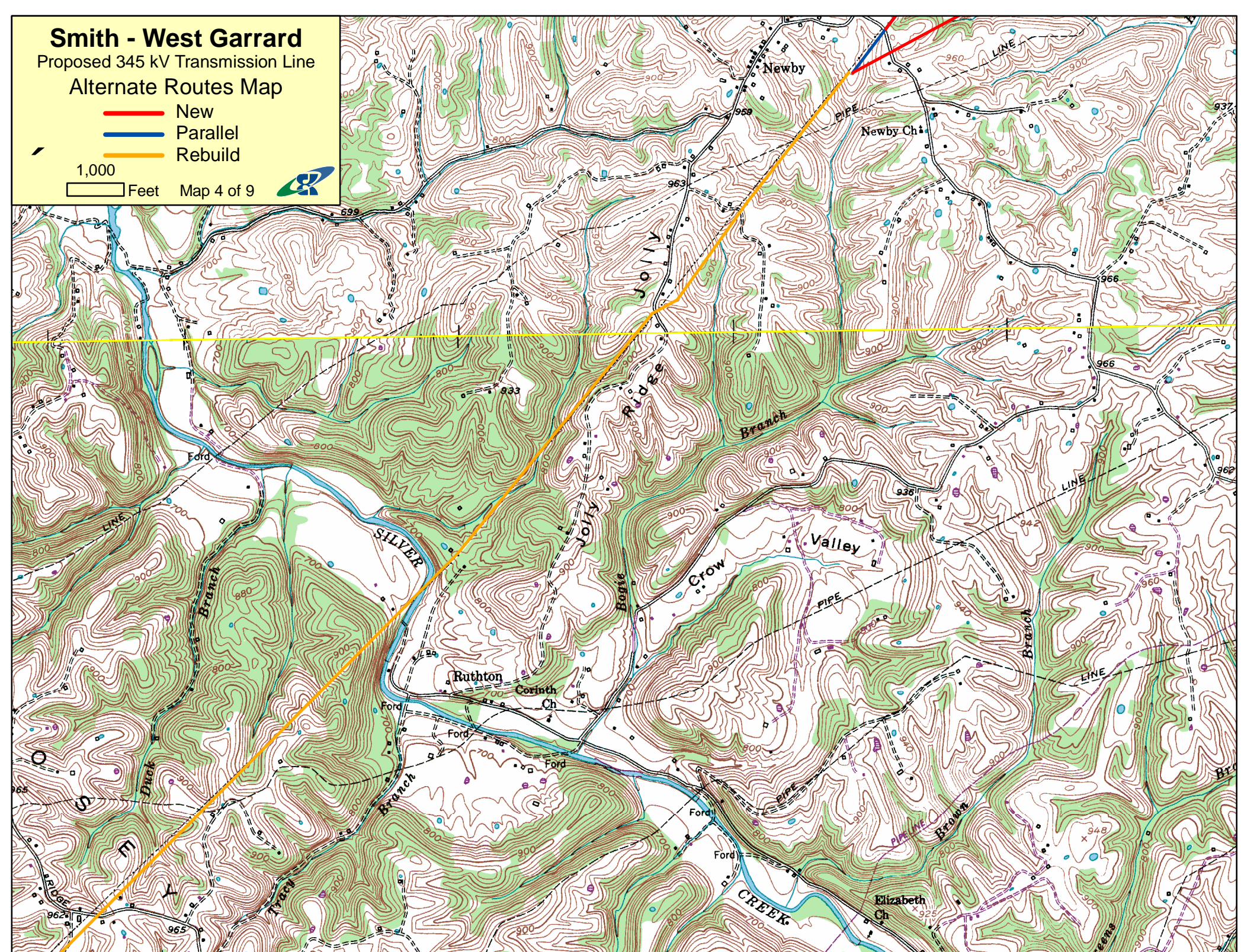
Proposed 345 kV Transmission Line

Alternate Routes Map

- New
- Parallel
- Rebuild

1,000

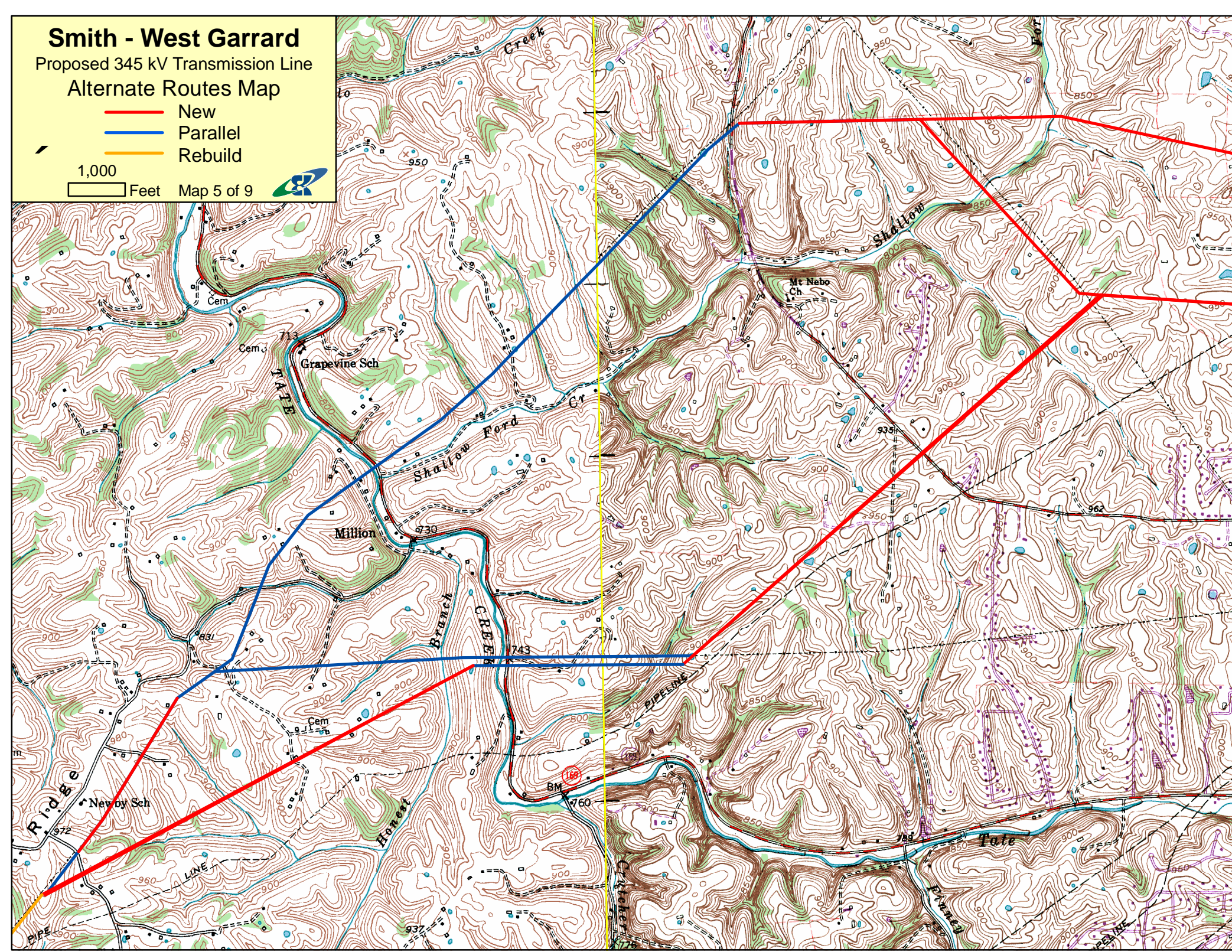
Feet Map 4 of 9



Smith - West Garrard

Proposed 345 kV Transmission Line

Alternate Routes Map



Smith - West Garrard

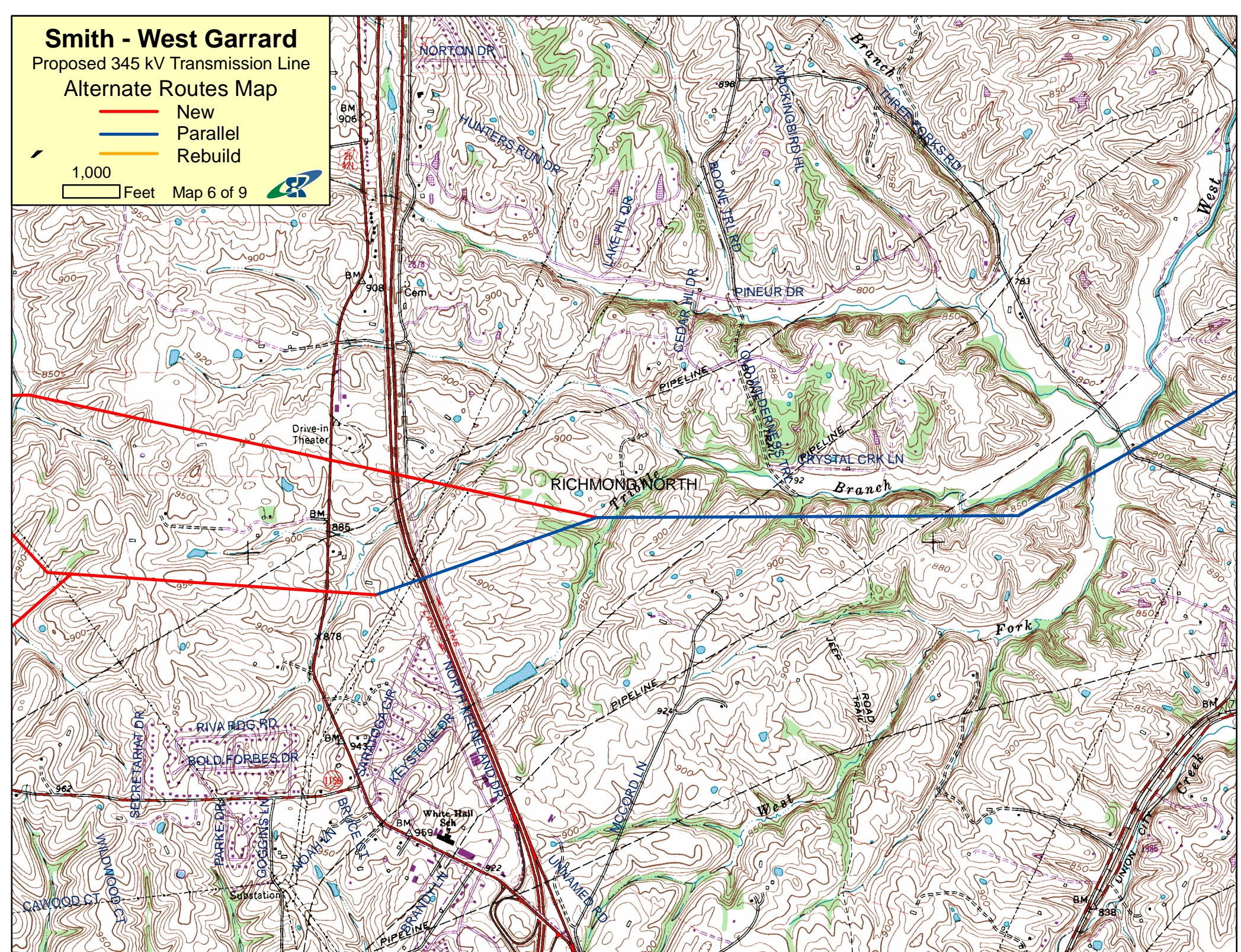
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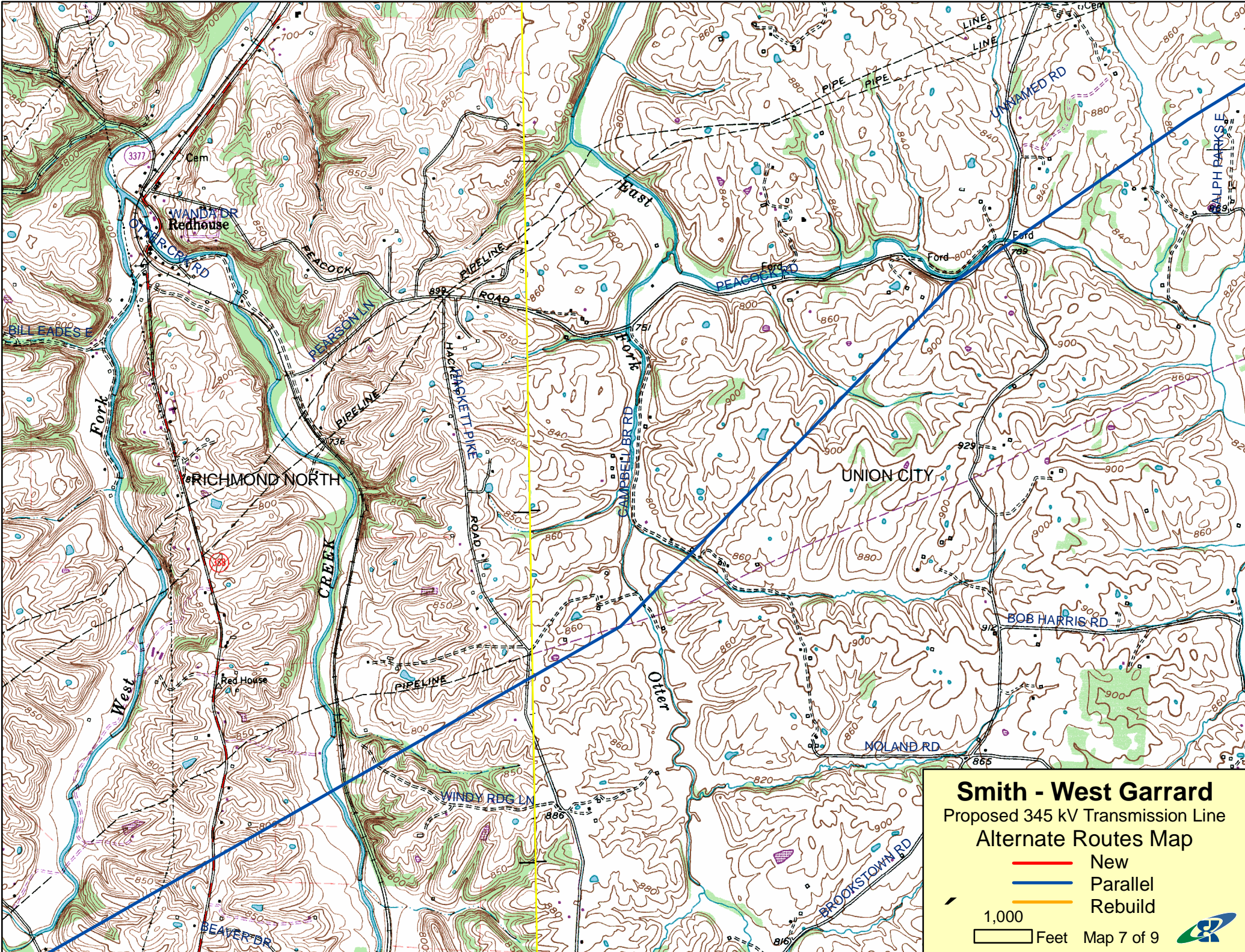
Alternate Routes Map

- New
- Parallel
- Rebuild

1,000

Feet Map 6 of 9





Smith - West Garrard

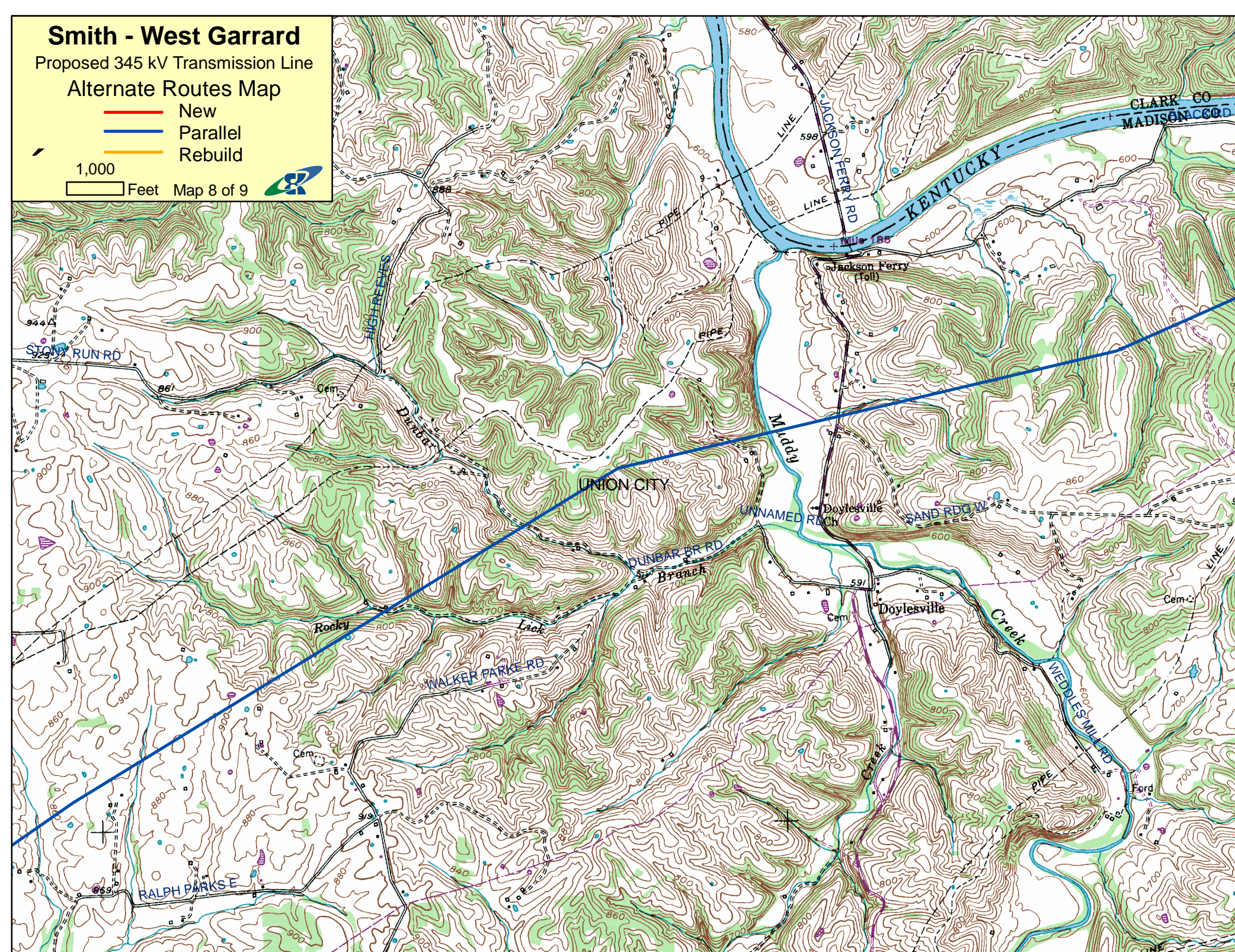
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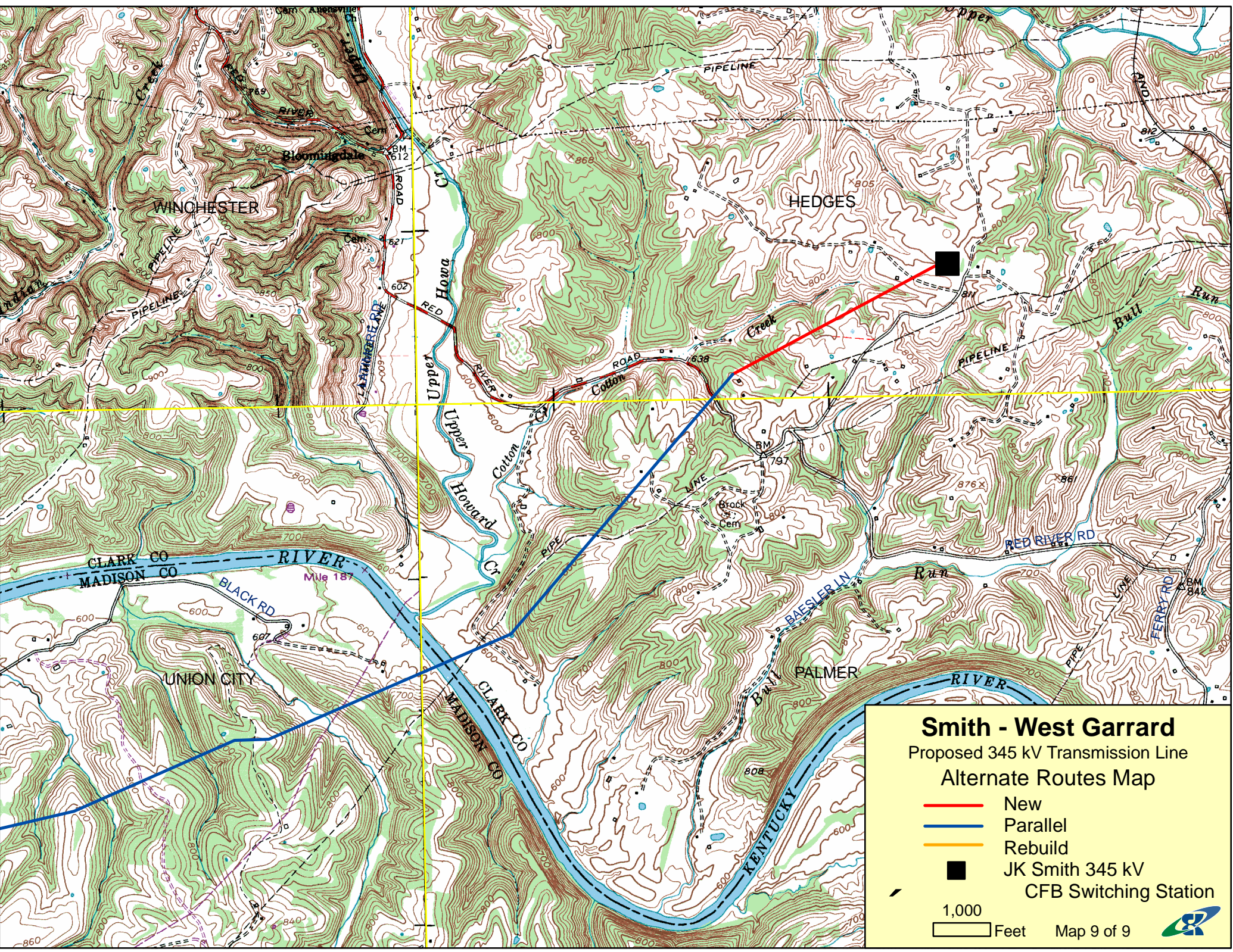
Alternate Routes Map

- New
- Parallel
- Rebuild

1,000

Feet Map 8 of 9





Smith - West Garrard

Proposed 345 kV Transmission Line
Alternate Routes Map

- New
- Parallel
- Rebuild
- JK Smith 345 kV CFB Switching Station

1,000
Feet

